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A Mapping and Analysis of Resources System application

W.C. Moore and W. Chow

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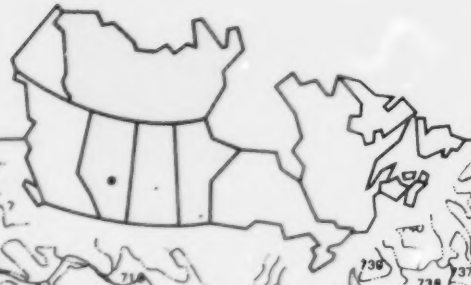

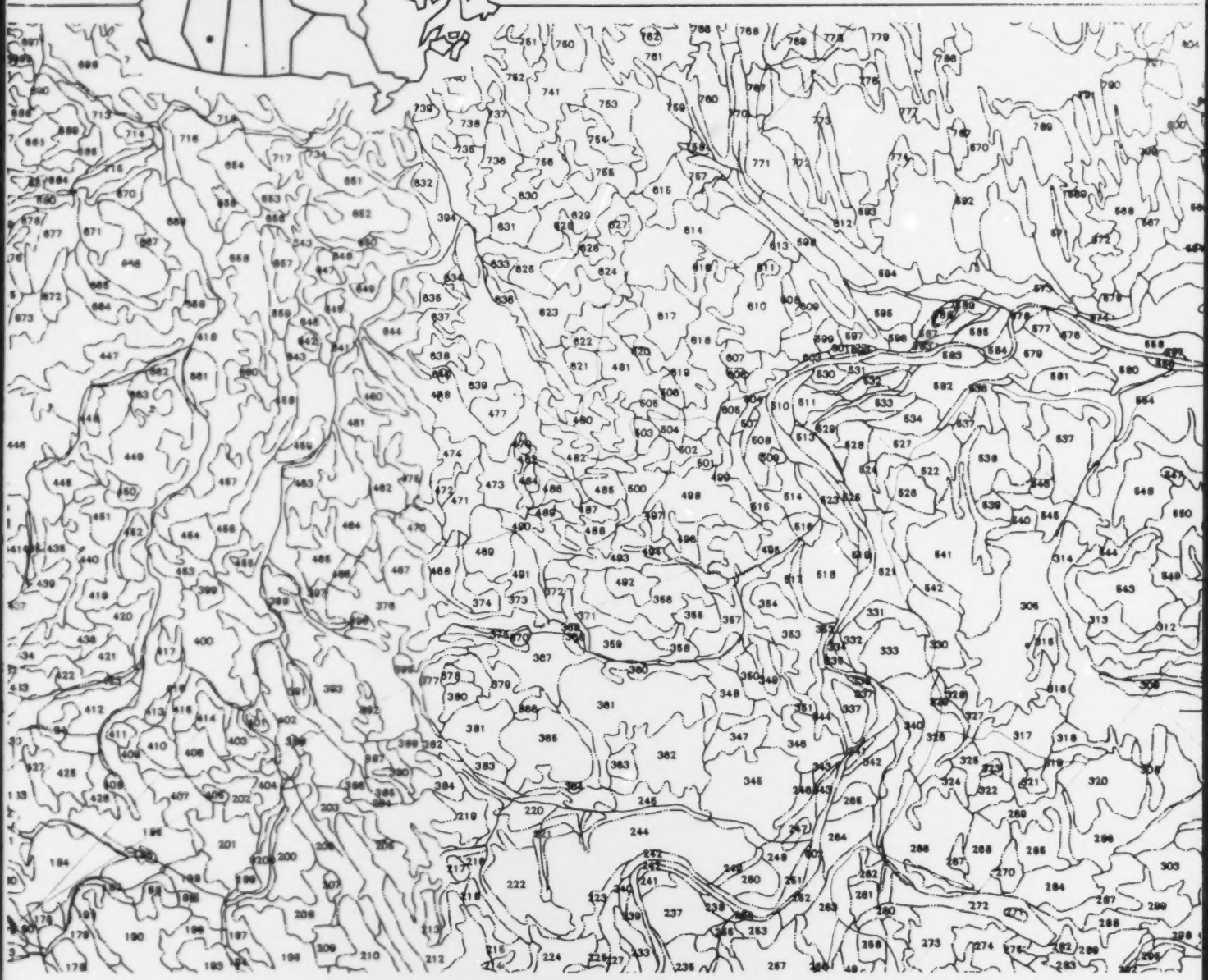

Energy from the Forest

Canada

87-03777/

The Northern Forestry Centre (NoFC) of the Canadian Forestry Service is responsible for fulfilling the federal role in forestry research, regional development, and technology transfer in Alberta, Saskatchewan, Manitoba, and the Northwest Territories. The main objectives of the center are research and regional development in support of improved forest management for the economic, social, and environmental benefit of all Canadians. Since 1982 the center has also assumed responsibility for the implementation of federal-provincial forestry agreements and employment stimulation programs in the forestry sector.

One of six regional centers, two national forestry institutes, and a headquarters unit, NoFC is located in Edmonton, Alberta, and has district offices in Prince Albert, Saskatchewan, and Winnipeg, Manitoba. Until joining Agriculture Canada in 1984 under a Minister of State (Forestry and Mines), the Canadian Forestry Service was part of Environment Canada.

A MAPPING AND ANALYSIS OF RESOURCES SYSTEM APPLICATION

W.C. Moore and W. Chow

INFORMATION REPORT NOR-X-285

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CANADIAN FORESTRY SERVICE
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ABSTRACT

A computer mapping system was developed as part of a geographic information system to enable forest inventory maps and supporting data to be converted to a biomass data base. Application of the Mapping and Analysis of Resources System to sample forest inventory maps for Alberta, Saskatchewan, Manitoba, and the Northwest Territories is described and evaluated. The resulting biomass inventory maps are reproduced, and appendixes provide listings of the derived biomass data.

RESUME

On a mis au point un système informatique de cartographie devant faire partie d'un système d'informations géographiques. Grâce à ce système, les données des cartes d'inventaires forestiers et les données connexes peuvent être converties pour l'alimentation d'une base de données sur la biomasse. Dans le présent rapport, les auteurs décrivent et évaluent l'application du système de cartographie et d'analyse des ressources à un échantillon de cartes d'inventaires forestiers de l'Alberta, de la Saskatchewan, du Manitoba et des Territoires du Nord-Ouest. Les cartes de la biomasse ainsi établies sont reproduites, et des listes des données ainsi obtenues sur la biomasse sont fournies en annexe.

FOREWORD

ENFOR is the acronym for the ENergy from the FORest (ENergie de la FORêt) program of the Canadian Forestry Service. This program of research and development is aimed at securing the knowledge and technical competence to facilitate in the medium to long term a greatly increased contribution from forest biomass to our nation's primary energy production. It is part of the federal government's efforts to promote the development and use of renewable energy as a means of reducing dependence on petroleum and other nonrenewable energy sources.

The ENFOR program is concerned with the assessment and production of forest biomass with potential for energy conversion and deals with such forest-oriented subjects as inventory, harvesting technology, silviculture and environmental impacts. (Biomass Conversion, dealing with the technology of converting biomass to energy or fuels, is the responsibility of the Renewable Energy Division of the Department of Energy, Mines and Resources.) Most ENFOR projects, although developed by CFS scientists in the light of program objectives, are carried out under contract by forestry consultants and research specialists. Contractors are selected in accordance with science procurement tendering procedures of the Department of Supply and Services. For further information on the ENFOR Biomass Production program, contact

ENFOR Secretariat
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CONTENTS

	Page
INTRODUCTION	1
GEOGRAPHIC INFORMATION SYSTEMS	1
Basis for the Study	3
METHODOLOGY	5
Mapping and Analysis of Resources System	5
Biomass Mapping	9
RESULTS	19
DISCUSSION	22
The Forest Base	22
Computer Mapping	23
Remote Sensing	23
CONCLUSIONS	23
REFERENCES	25

APPENDIXES

1. Summary of Universal Topographic Map (UTM) grid cell (area) reference rules	27
2. Biomass data for Saskatchewan sample map	29
3. Biomass data for Manitoba sample map	45
4. Biomass data for Alberta sample map	55
5. Biomass data for Northwest Territories sample map	65

FIGURES

1. Mapping and Analysis of Resources System (MARS) flow chart	6
2. SHL-RAMS layout	8
3. Locations of sample forest inventory maps	10
4. A 4-km^2 portion of the Saskatchewan forest inventory map (100 km^2)	11
5. Portion of the Saskatchewan stand and stock tables from computer printouts	15
6. Portion of the Manitoba standard and stock tables from microfiche	16
7. An extract from the Alberta forest stratum data tape	17
8. An extract from the Alberta forest data tape, which was used for the Northwest Territories	18
9. Biomass inventory for Saskatchewan UTM Z13 E45 N597, Bittern Lake	20
10. Biomass inventory for Manitoba Twp. 25, Rng. 9, E.P.M., 1977, Management Unit 31	20
11. Biomass inventory for Alberta Twp. 44, Rng. 16, Mer. 5, Blackstone River	21
12. Biomass inventory for Fort Smith, NWT (NTS 75 D/4 SW 1/4)	21
13. Unsupervised classification of a digitally corrected LANDSAT image with 50 × 50 m pixels	24

TABLES

Page

1. National Topographic Series and LANDSAT equivalents for the sample forest inventory maps used in the study 3
2. MARS operations 7
3. Boreal Forest section descriptions (Rowe 1972) for sample maps 9
4. Saskatchewan forest map legend 12
5. Summary of biomass statistics for the sample inventory maps 22

NOTE

The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by the Canadian Forestry Service.

INTRODUCTION

Canadian forests have great potential as a renewable energy source. Combustion of forest biomass, a term that includes all forest vegetation, already fulfills about 4% of Canada's energy needs. The use of forest biomass as a renewable energy source could increase as alternatives to petroleum energy sources are sought. Knowing how much biomass is available and where it is located will thus be required for planning and management in the future. In practical terms, planners and decision makers will require cost-effective forest biomass inventories in conjunction with the traditional merchantable forest cover inventories. Remote sensing techniques can efficiently provide the large amount of additional information required, and computer mapping can be used to effectively integrate location-specific data for forested areas. The Northern Forestry Centre (NoFC) has developed a computer mapping capability as part of a geographic information system (GIS). The system was developed to provide a capability for converting forest inventory maps and supporting data to a biomass data base under the federal government's ENergy from the FORest (ENFOR) program.

This report presents an overview of the nature of geographic information systems and an evaluation of NoFC's experience with such a system based on the Mapping and Analysis of Resources System (MARS) applied to sample forest inventory maps for Alberta, Saskatchewan, Manitoba, and the Northwest Territories.

A GIS integrates, in digital form, disparate data that are compiled and published at different map scales and in different formats. A GIS then becomes a tool for land management and policy decisions at provincial, regional, and national levels. The characteristics of a GIS are adequately summarized by Kleckner and Anderson (1983) as follows:

1. A GIS can be divided into three basic modules that usually concern data input, analysis, and output.

2. There are two principal types of GIS. One uses grid cell, or raster data, and the other uses data in vector form. LANDSAT data, for example, are from a scanner and are in raster form. Manual digitizing data, on the other hand, are usually in vector form but are comparatively easy to convert to raster form. Raster formats usually contain large amounts of redundant data for line mapping purposes and are quite difficult to convert to vector forms. Vector systems are usually much superior for output graphics, but raster systems can perform a number of analyses more rapidly and efficiently than vector systems (e.g., map overlays for monitoring change).

3. It is essential that a GIS be capable of changing scales and projections and geometrically registering the maps.

4. Interactive editing features are essential for examining the data and making corrections as necessary. Confirmation that separately digitized sides of a polygon close at a point is an example.

5. Data input is usually required separately for each theme so that each map must be digitized, edited, and entered into the data base. This process of building the data base is the most tedious and time-consuming task, but it is one of the most critical steps in the application of a GIS.

6. An overlay capability is important for analyses. Two or more sets of location-specific data can be combined to produce a new set and thereby a new map.

7. In analyses, functions are used to select, retrieve, display, window, zoom, tabulate areas, measure distances, and so forth. With an interactive capability, data can be analyzed rapidly, alternatives examined, hypotheses tested, and the improvements in results can be substantial.

8. The highest quality of output with the greatest use of color and symbolization possible, with particular attention to format, is required for acceptable cartographic outputs. While the cathode ray tube interactive display is critical for the analyst, high quality hard-copy output is essential for the decision-makers and for forest operations in the field. The practicality of this point is not a subject of this study, but it is important in this color-television age.

GEOGRAPHIC INFORMATION SYSTEMS

A computer mapping system is a component of a GIS and is basically a map filing system in which spatially referenced data can be efficiently stored, classified, updated, manipulated, and retrieved as custom maps and

tables. This system is a significant improvement over the traditional banks of map drawers, thematic overlay products, map redrawing operations, tedious dot counting, and manual calculations and tabulations often necessary to obtain forestry data. The development and operational application of computer mapping systems are thus important bases for GIS. Biomass inventories, or data bases, can become an integral part of such a system.

A comparison between a word processor and a computer mapping system might help to illustrate the capabilities and technology involved in computer mapping and GIS. Such systems consist mostly of manual inputs and automated outputs. A word processor creates and manipulates data files containing words, numbers, symbols, sentences, paragraphs, and tables that have been manually keyed or electronically transferred into the system and that can be used to form a text. This text can then be revised and adjusted quite efficiently by the computer. The text can be automatically printed in a variety of formats that depend on the printer equipment available. A computer mapping system goes beyond this comparatively well-developed technology. Computer mapping usually involves the manual creation (i.e., digitizing), storage, manipulation, and retrieval of geographically referenced data files for points, lines, polygons, and texts. The automated output formats largely depend on the printer or plotter equipment available. The systematic revision, adjustment, or updating of files in computer mapping systems are thus more complex than similar operations in most word processors. A GIS is a computer mapping system that is capable of further computer processing data files (i.e., making data analyses) to produce entirely new, geographically referenced files such as biomass estimate attributes for map polygons.

Many automated tools have been developed for the efficient storage, retrieval, analysis, and mapping of geographic data. Historically, maps have been useful for record keeping, problem analysis, idea formation, future prediction, policy development, and concept communication. Today the development and operational applications of computer mapping systems are important components of a GIS (Dangermond, undated). For instance, many agencies collect, analyze, and manage resource data. These data, however, are often widely dispersed and are not readily analyzed because of variability in format and map scale (Kleckner and Anderson 1983). An appropriately configured GIS can transform the large numbers of existing forestry maps and supporting data into reasonable biomass estimate data bases in such a case. The GIS can thus be a key component in the integration of forestry data acquisition, interpretation, and documentation in a total environmental context.

The following are some of the advantages and disadvantages of a geographic information system (Dangermond, undated; Wood 1983).

Advantages:

1. Data are maintained in a physically compact format (e.g., magnetic tapes).

2. Location-specific, or geographic, data bases are simply quantitative information, or attributes, coded and stored by province, map sheet, grid cell, hectare, or any other area units desired.

3. Geographic data bases can be specified, created, and maintained for an infinite number of subjects and attributes.

4. Preexisting location-specific (e.g., stand) data in its current form can be directly integrated with the geographic data base.

5. Graphic and nongraphic (i.e., attribute) information can be merged and manipulated simultaneously in a related fashion.

6. Various computerized tools allow for a variety of types of manipulations, such as multiple map overlays, mapped measurements, and transformations for data base updating or any other alterations.

7. Resulting map or tabular reports can be quickly produced as singular or composite themes for any or all locations in the geographic data base at whatever scale or classification selected from all integrated sources.

8. Rapid and repeated analytical testing of conceptual models (e.g., forest productivity) can be performed for evaluations of both scientific and policy criteria over very large areas in short periods of time.

9. Change analyses can be efficiently performed for two or more time periods.

10. Certain forms of analyses can be performed cost-effectively that could not be done efficiently for large areas if performed manually (e.g., slope and aspect calculations or overlay analyses of multiple sets of polygon map sheets).

11. Interactive graphic design and automated drafting tools can be applied to cartographic design and map production.

12. The resultant tendency to integrate data collection, spatial analyses, and decision-making processes into a common information flow has numerous advantages in terms of efficiency and accountability.

Disadvantages:

1. Cost of initial acquisition of a system is high.

2. There is large technical and financial overhead for accommodation, skilled professionals and technicians, and software maintenance.

3. Problems arise when converting existing records into automated data files (e.g., digitizing or related data conversions).

4. There are marginal cost benefits in certain application areas.

The characteristic evolution of computer mapping and a GIS begins with the system first being used for the compilation of a forest inventory data base. Then, with the incorporation of complex statistical processing such as conversion to a biomass inventory data base, a GIS becomes an analytical tool. Finally, when modeling and complex decision support capabilities are developed for a mapping system, it becomes a management tool (Crain and MacDonald 1983). MARS has evolved to the point of being a prototype analytical tool.

Basis for the Study

Sample forest inventory maps and supporting data (i.e. stand and stock tables) were provided by the Alberta Forest Service, the Manitoba Forestry Branch, the Saskatchewan Forestry Branch, and the Northern Affairs Program of the Northwest Territories. A standard terminology has been adopted for all of Canada (Bonnor 1978), although the provinces have not yet totally changed over to it. The maps, cross-referenced to the applicable National Topographic Series (NTS) maps and LANDSAT imagery indexes, are identified in Table 1.

Table 1. National Topographic Series and LANDSAT equivalents for the sample forest inventory maps used in the study

Sample maps	National Topographic Series (NTS) map (1:250 000 scale) and LANDSAT (LS) track/frame index
Alberta Twp. 44, Rng. 16, W5 Mer. Management Unit R-3 1:15 000 scale	NTS 83C, Brazeau LS 1-3: 48/47-23 LS 4-5: 44-23
Saskatchewan UTM Z13 E45 N597 Bittern Lake 1:12 500 scale	NTS 73H, Prince Albert LS 1-3: 40/41-22 LS 4-5: 37-23/38-22
Manitoba Twp. 25, Rng. 9, E.P.M. Management Unit 31 1:15 840 (20 chain) scale	NTS 62P, Hecla LS 1-3: 33-24 LS 4-5: 30/31-24
Northwest Territories NTS 75D/4 SW 1/4 Fort Smith 1:50 000 scale	NTS 75D, Fort Smith LS 1-3: 47/48-18 LS 4-5: 43/44-18

This material was converted to a biomass inventory data base by applying regional biomass equations to forest species volumes (Singh 1984). The renewable biomass of overlapping peatland areas might be an inventory requirement in the future (Zoltai and Pollett 1983). As is the case with forest biomass computations, this could be another reinterpretation of existing data for a purpose for which the original survey was not intended (Napton and Luther 1981); this might distort the results. Nevertheless, it would still be a reasonable compromise between budgetary constraints and increasing spatially distributed information demands. Incorporation of up-to-date supplementary information, such as from LANDSAT imagery interpretation, might also become more important in the near future.

The utility of computerized mapping of broad summaries of forestry statistics for the whole country has been demonstrated by Statistics Canada[1] and the Forestry Statistics and Systems Branch of the Canadian Forestry Service (Bonner 1982); however, the regional establishments of the Canadian Forestry Service have additional research, assistance, and coordination responsibilities for more detailed operations and statistics in cooperation with provincial and other forest agencies. In this context the remote sensing task is to collect data with sensors from airborne or earth satellite platforms, analyze and synthesize the data, and convert the data into useful information (Philipson 1980). Because forestry includes the multiple functions of forests, the long periods of growth and production, the vast areas of lands, and the high risk and dependence on nature and site, many forms of information from many different sources are required for forest management (Hildebrandt 1980). The synoptic and multispectral properties of satellite data are very well suited to a broad reconnaissance-level inventory over a region for which there is no suitable inventory derived from aerial photographs; satellite data also has a potential for updating existing forest inventory data through the identification of major changes and integration with appropriate maps, or data bases, of forest conditions (Zsilinszky 1981). The additional work required to make a GIS compatible with a variety of map and remote sensing inputs has been documented by others (Myers 1981; Lee 1983). The feasibility of introducing easily obtainable LANDSAT data to significantly improve the prediction of spatial forest site indexes has also been demonstrated (Tom and Miller 1978). Satellite data is almost always received on earth as digital data, and air-photo interpretations usually consist of lines on maps. There will be increased emphasis on the integration of such remote sensing with geographic information systems in the future.

While remote sensing can greatly increase the efficiencies of information acquisition, computerized systems can increase operational productivity and flexibility, particularly for multisource change mapping (Hegyi and Sallaway 1983). Preliminary GIS-compatible surveys with earth-satellite remote sensing have also been demonstrated (Kalensky et al. 1981). The economies of scale are also important (Crain and MacDonald 1983). For instance, a cost-effective means of using LANDSAT imagery for the revision of NTS maps has already been demonstrated (Fleming 1982), as has the monitoring of burned land in remote areas[2]. Such economic, yet accurate, generations of location-specific change themes are particularly well suited to efficiently updating geographic data bases. A universally applicable, simple, consistent, accurate, and computer-compatible geographic referencing capability is required for location-specific data mapping purposes. The requirement has been evaluated (Moore and Bonnor 1980), and the Universal Transverse Mercator (UTM) grid was recommended; it is scribed on NTS maps. Systematic area reference rules are outlined in Appendix 1.

In addition, forest mensuration with large-scale air-photo sampling (i.e., very small area in great, measurable detail) has been developed to significantly enhance fieldwork (Hall 1984). This latter technique applied to all types of forest stands can be important for the production of adequate supplementary data such as stand and stock tables for forestry strata. The handy availability of that sampling photography for reinterpretations might also become essential to validate reprocessing (i.e., reinterpretations) of whole data bases for some new purpose (e.g., forest to biomass inventories). New fieldwork could be very expensive (Philipson 1980). Great care and concise qualifications are always required for the results (Napton and Luther 1981). This report, therefore, must look beyond the mechanical conversion of one large data set to another of related values.

---

[1] Cunningham, R.A. 1982. Computerized mapping of national forest inventory. Paper presented at the National Research Council Bioenergy Research and Development Seminar, Winnipeg, Manitoba.

[2] Moore, W.C. 1985. Mapping of burned land in the Northwest Territories. Can. For. Serv., North. For. Cent., Edmonton, Alberta. Unpublished report.

METHODOLOGY

The Mapping and Analysis of Resources System (MARS) is a prototype GIS at NoFC. The system has been used to convert sample forest inventory maps to biomass data bases. This report discusses the structure and some of the practical advantages, potential limitations, and future development requirements of such a system.

Mapping and Analysis of Resources System

MARS is organized according to the flow chart in Figure 1; the operations used are listed in Table 2. Systemhouse Limited's[3] Resource Analysis and Mapping System (SHL-RAMS) is central to MARS. In addition, Gregory Geoscience[4] Procom-2 image transfer equipment for the change interpretation stage was acquired separately.

The SHL-RAMS installed at NoFC was developed under the ENFOR program of CFS. Figure 2 illustrates the physical layout of the SHL-RAMS. A map system data base is created through digitizing, and it is central to storing all feature types, forming polygons with associated attributes, and producing shaded polygon maps. The following are current utilities for managing the data base of the SHL-RAMS.

Map registration: This utility is used to create data definition files (DDFs), open existing DDFs, define map origin and control points, transform digitizing table outputs to the UTM grid, and verify residuals between known control points and digitized control points.

Work station settings: This utility sets parameters for entering digitized data by establishing sample interval, maximum and minimum cursor travel, and tolerance ranges for data recall.

Features: This utility describes single points, multipoints, continuous lines, texts, polygons, and polygon attributes within the digitized data.

Digitizing features: A set of commands for digitizing and coding points and lines through feature entry, automatic repeat, feature attaching, and mode change (i.e., from curvilinear lines to start and end points of a straight line) are available.

Editing features: A set of commands for editing features such as restart, point removal, backup, midsection change, deletion, joining, and splitting are also available.

Text: Capabilities to enter and edit text and to describe text attributes such as text angle are available.

Polygons: Polygons can be constructed on RAMS by digitizing each boundary, pointing in sequence to all the boundaries of the required polygon on the graphics display, or by identifying the attributes of the required polygon in the data base.

Graphic operations: Display graphics are controlled by operator commands for digitizing echos on the display, for windowing a selected area, for moving the window, or for drawing selected features by layer or groups of layers.

Display facilities: Commands are provided for polygon coloring, selection of patterns, polygon coloring by attributes, numeric and alphabetic dot matrix characters, dot matrix symbols, line symbolism for features, and a hard-copy color proof printout of the graphics display.

Polygon to grid: A batch program is available so that polygon structured data (vectors) can be converted to grid form (raster) to accomplish overlays of other location-specific data that is external to the system.

Grid merge: A batch program is available to combine compatible grid data sets.

Grid display: This is an ability to produce thematic grid maps whereby shading patterns can be selected according to polygon attribute values.

Grid count: Statistics can be provided on the number of polygons, or grid cells, in a particular class according to attribute values.

Polygon overlay: A batch program is available to produce new polygons where overlaid polygon boundaries differ.

The theoretical capabilities of the SHL-RAMS were described by Kirby and Chow (1982). Simplified

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[3] Systemhouse Limited, 2827 Riverside Drive, Ottawa, Ontario K1V 0C4.

[4] Gregory Geoscience Limited, 1794 Courtwood Crescent, Ottawa, Ontario K2C 2B5.

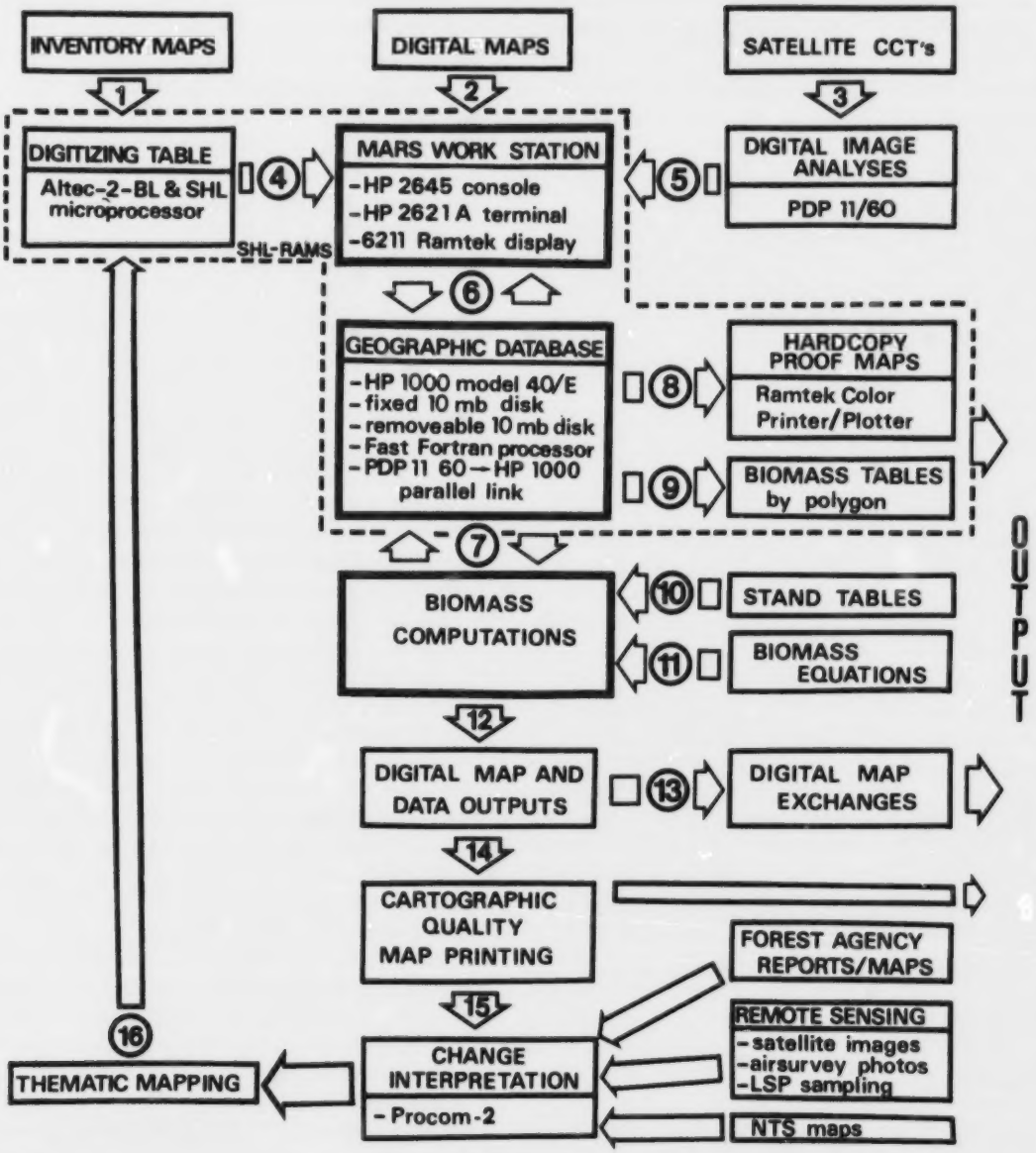

Figure 1. Mapping and Analysis of Resources System (MARS) flow chart. The broken line encloses the Systemhouse Limited Resource Analysis and Mapping System. The numbers between the blocks refer to the operations used, which are listed in Table 2.

Table 2. MARS operations

1. A high-quality (preferably mylar) map is required, and geographically referenced attributes, or data definition files (DDFs), are designed.
2. The OPEN map file command results in the digital map being ready for display on the screen.
3. Earth satellite imagery are received as computer compatible tapes (CCTs) by the user.
4. SHL-RAMS commands are required on digitizer to enter line segments.
5. Unsupervised classifications have been used with portions of CCT imagery and converted to SHL-RAMS compatible display.
6. SHL-RAMS commands to PAINT or DRAW are required for display. Other commands display tables, generate reports, or transfer to PDP-11/60.
7. Biomass conversion tables are applied, and the results are entered into the DDF.
8. RAMS PRINT command will produce a proof map in hard copy on the plotter.
9. LEGEND command produces attribute classes on the display, and the PRINT command will produce a hard copy reproduction of the display screen.
10. Stand tables are required with digitized maps for sufficient data for biomass prediction equations (e.g., volume/biomass tables).
11. Biomass per hectare is computed by polygon and entered in the DDF.
12. Each attribute can be displayed independently or combined with other attributes for plotting thematic maps.
13. RAMS-GIMMS[1] is provided for compatibilities with other systems.
14. GIMMS formatted tape can be sent out for cartographic-quality line map production.
15. Cartographic-quality map can be used for theme overlays to form new polygons.
16. POLYGON OVERLAY capability means only new themes (e.g., burned-land perimeters) need to be digitized, and not the whole map sheet, to produce an updated map with new polygon attributes.

[1] Geographic Information Manipulation and Mapping System digital data format. From Cunningham, R.A. 1982. Computerized mapping of national forest inventory. Paper presented at the National Research Council Bioenergy Research and Development Seminar, Winnipeg, Manitoba.

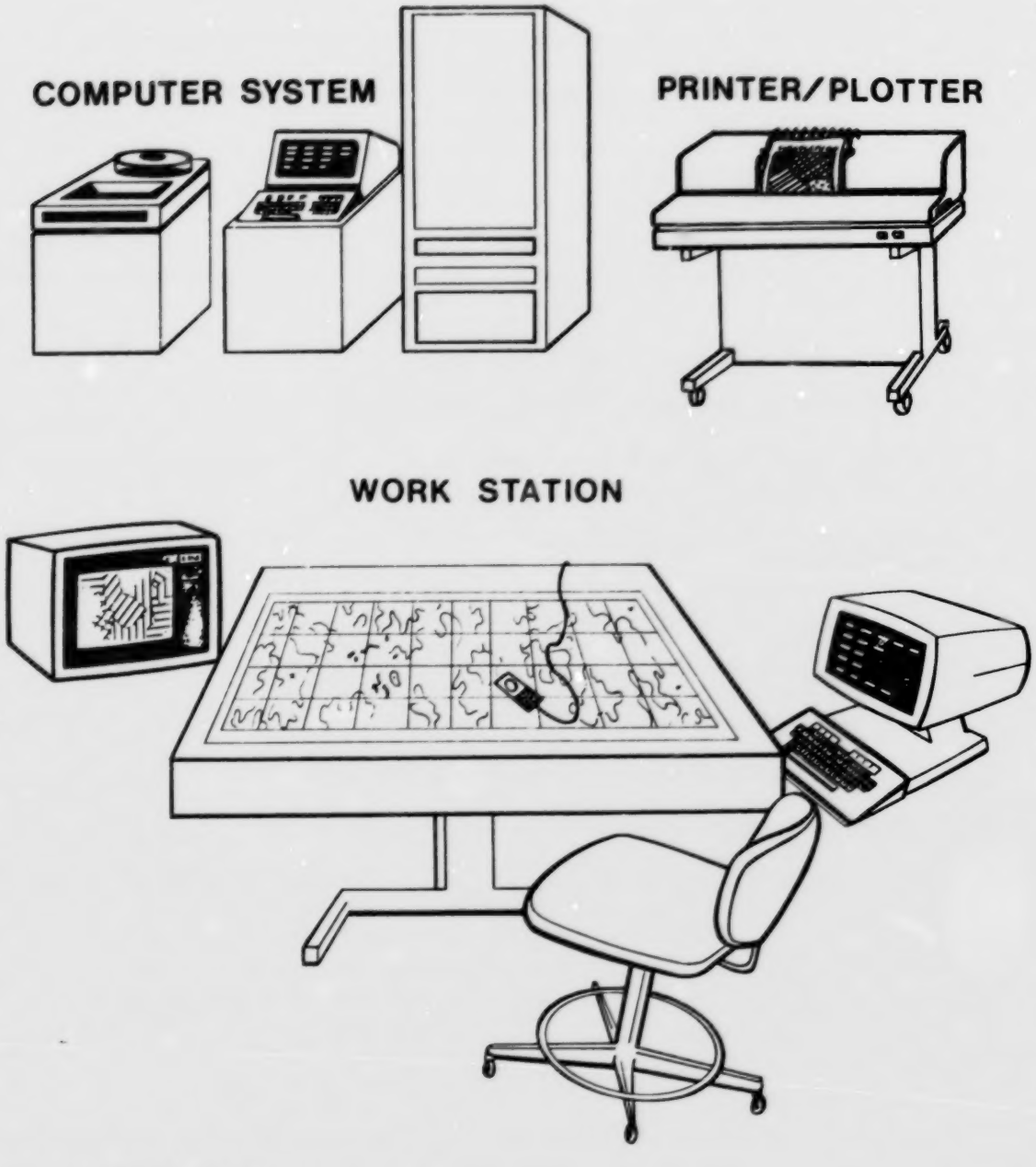

Figure 2. SHL-RAMS layout.

operating instructions for the SHL-RAMS are available on request from the authors.

Biomass Mapping

The sample forest inventory maps provided were randomly selected to include widely separated areas of the Boreal Forest Region (Rowe 1972; Fig. 3) and to represent different forest sections. The predominant tree species present in each of the four maps are briefly described in Table 3.

A portion of the Saskatchewan forest inventory map is reproduced in Figure 4 to illustrate the material normally available from forest inventory agencies. The symbols for the map polygon annotations, or polygon attributes that may or may not be used for biomass computations are defined in Table 4. The inventory map does not, however, provide sufficient data for the computations of volumes or biomass by polygon, and reference must be made to representative stand and stock tables for that forest section or forest stratum.

Volumes by tree species and cover type (i.e., dominant, subdominant, and understory) from the stand and stock tables were converted directly to biomass per hectare by forest inventory polygon. A portion of the stand and stock tables used with the Saskatchewan sample map (i.e., for forest type code S 20 D WS) is reproduced in Figure 5. Likewise, portions of comparable tables used with the Manitoba, Alberta, and Northwest Territories maps are in Figures 6, 7, and 8. The formats, contents, and classification criteria vary. Because there are few usable forest inventory maps (i.e., ≥1:20 000 scale) and no appropriate stand and stock tables available for the Northwest Territories, tables from a similar stratum in Alberta were used. Applicable tree species and cover type data from the stand and stock tables were

Table 3. Boreal Forest section descriptions (Rowe 1972) for sample maps

Manitoba
B.15—Manitoba Lowlands

Good stands of white spruce, trembling aspen, and balsam poplar, sometimes in mixture with balsam fir and white birch, occur on the better-drained strips bordering rivers and creeks. Patches of black spruce and tamarack, with intervening swamps and meadows, prevail on the flat and poorly drained land. Low ridges throughout are generally forested with jack pine, trembling aspen, or bur oak.

Sample map: elevations 210–250 m above sea level; latitude 50° 10′N

Saskatchewan
B.18a—Mixedwood

Mixtures of jack pine, white spruce, balsam fir, trembling aspen, and balsam poplar occur in varying proportions in the well-drained uplands. Black spruce and tamarack muskeg has developed in the lowlands and in the upper water-catchment areas.

Sample map: elevations 500–520 m above sea level; latitude 53° 50′N

Alberta
B19c—Upper Foothills

Lodgepole pine predominates. White spruce and black spruce are also present, but balsam poplar and white birch are only sparsely represented.

Sample map: elevations 800–1300 m above sea level; latitude 52° 45′N

Northwest Territories
B23a—Upper MacKenzie

White spruce and balsam poplar form the main forest cover types on the alluvial flats bordering the rivers and creeks. Jack pine and trembling aspen occupy the benches above the flood plains for various distances back to the highlands. Black spruce and tamarack occur in moist-to-wet locations.

Sample map: elevations 180–210 m above sea level; latitude 60°N

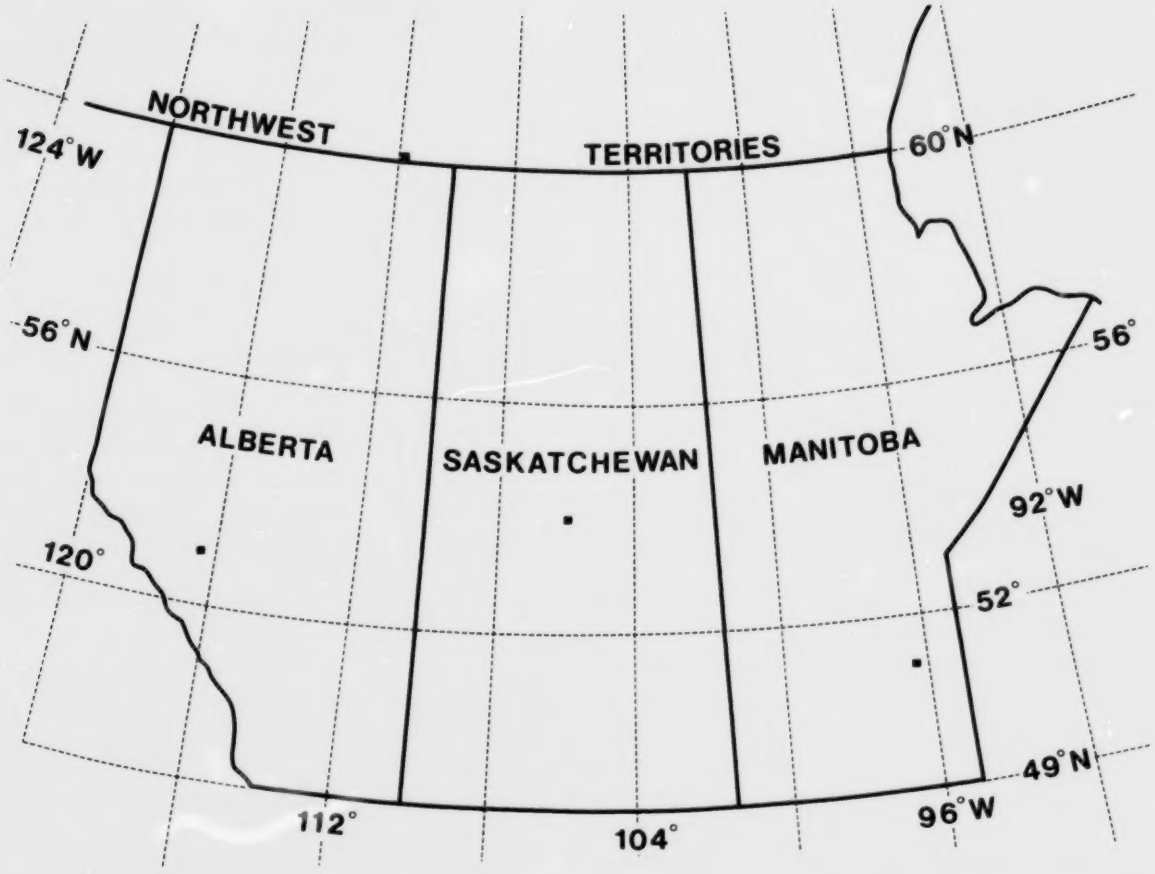

Figure 3. Locations of sample forest inventory maps.

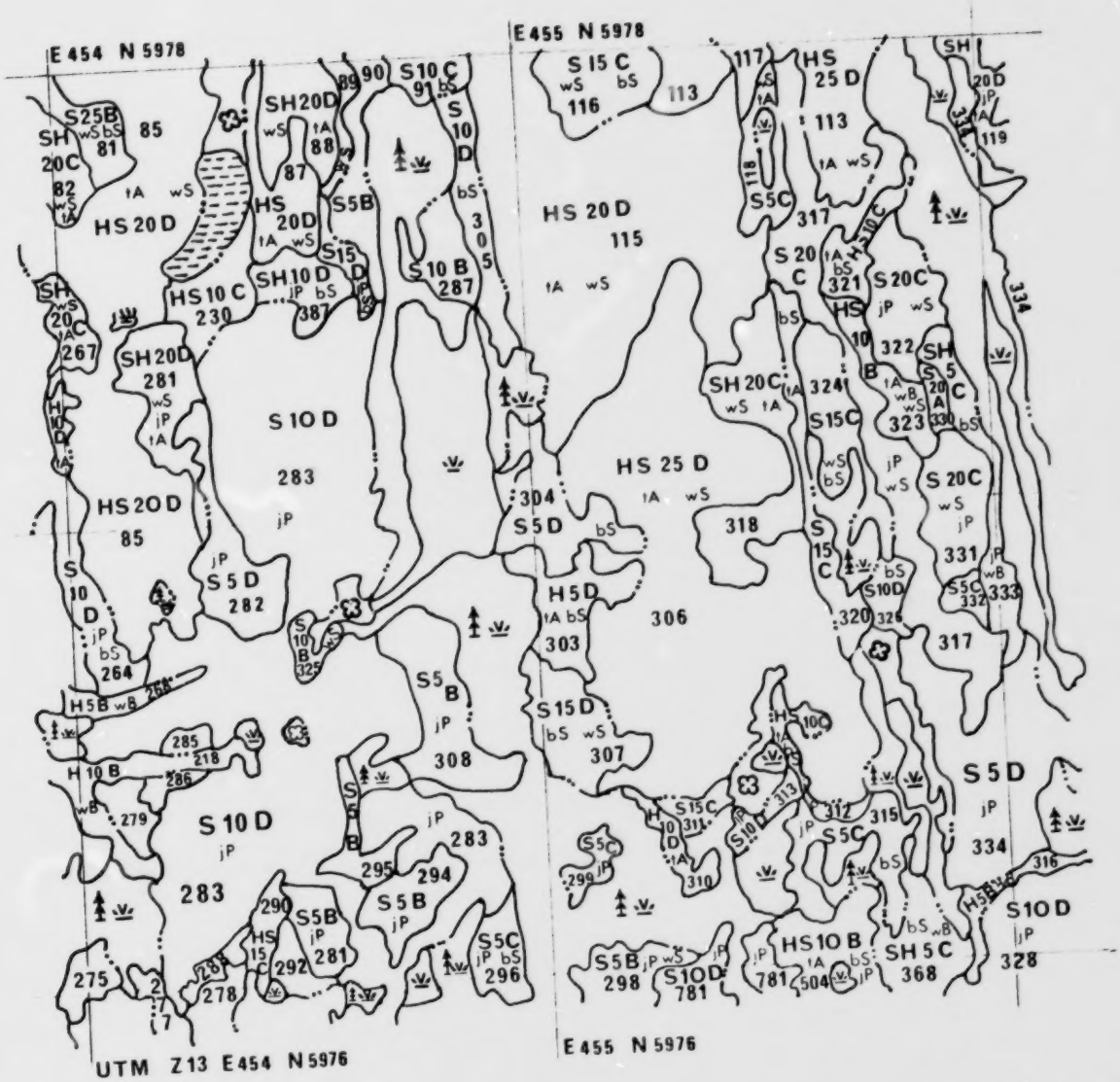

Figure 4. A 4-km² portion of the Saskatchewan forest inventory map (100 km²). The symbols are defined in Table 4.

Table 4. Saskatchewan forest map legend

Species association

Softwood (over 75% softwoods by volume)	S
Hardwood (less than 25% softwoods by volume)	H
Mixed wood (50–75% softwoods by volume)	SH
Mixed wood (25–50% softwoods by volume)	HS

Crown closure		Height	
10–30%	A	2.5–7.5 m	5
30–55%	B	7.5–12.5 m	10
55–80%	C	12.5–17.5 m	15
80% +	D	17.5–22.5 m	20
		22.5 m +	25

Species

White spruce	wS	Trembling aspen	tA
Black spruce	bS	Balsam poplar	bPo
Jack pine	jP	White birch	wB
Balsam fir	bF	Manitoba maple	mM
Tamarack	tL	White elm	wE
Lodgepole pine	lP	Green ash	gAs
Fen, bog, open muskeg		Brushland	
Treed muskeg		Flooded	

Update boundary

Compilation history

Forestry information compiled and drawn by the Saskatchewan Forestry Branch in 1977 from aerial photographs taken in 1974–75.

PROGRAM FB1041FC - STAND AND STOCK TABLE - TREES

SASKATCHEWAN PARKS AND RENEWABLE RESOURCES - FORESTRY BRANCH — DATE RUN 22 FEB 83

SURVEY AREA C-50 SOUTHERN COMMERCIAL ZONE — LIVING TREES ONLY — S I UNITS

FOREST COVER TYPE

S 20 D WS

NO. OF PLOTS/ SUBPLOTS	SPECIES	D.B.H. CLASS (CM.)	AVG.HEIGHT	ALL CROWN CLASSES TREES/HA.	BASAL AREA/HA.	CU.M./HA.
17	WHITE SPRUCE	2.00	1.50	29.41	0.0092	
		4.00	3.00	88.24	0.1109	
				117.65	0.1201	
	DBH 001 TO 006 AVERAGE	3.81	2.83	58.83	0.0601	
		8.00	7.90	88.15	0.4424	0.9818
		10.00	13.80	69.54	0.5464	2.4344
		12.00	14.20	60.37	0.6822	3.3981
		14.00	15.90	91.39	1.4066	8.2960
		16.00	18.20	56.85	1.1427	7.9764
		18.00	19.00	63.33	1.6110	11.9962
				429.63	5.8313	35.0827
	DBH 008 TO 018 AVERAGE	13.15	14.44	71.61	0.9719	5.8471
		20.00	20.50	55.93	1.7565	14.3277
		22.00	20.80	51.85	1.9707	16.4738
		24.00	20.60	36.30	1.6419	13.6135
				144.08	5.3691	44.4148
	DBH 020 TO 024 AVERAGE	21.78	20.63	48.03	1.7897	14.8049
		26.00	22.90	28.15	1.4947	13.7752
		28.00	23.10	20.37	1.2541	11.6152
		30.00	21.20	5.56	0.3902	3.2942
		32.00	25.10	3.70	0.2915	2.8912
		36.00	27.60	5.56	0.5657	6.0615
		42.00	28.10	1.85	0.2689	2.8201
				65.19	4.2651	40.4574
	DBH 028 TO 999 AVERAGE	28.86	23.49	10.87	0.7109	6.7429
	SPECIES TOTAL DBH 008+ AVERAGE	17.56	18.78	839.90 42.59	15.4655 1.0310	119.9549 7.9970
	SPECIES TOTAL DBH 001+ AVERAGE	16.20	14.56	758.55 44.50	15.5856 0.9168	119.9549 7.9970
17	BLACK SPRUCE	2.00	2.80	117.65	0.0370	
		4.00	5.40	323.53	0.4066	
		6.00	7.60	470.59	1.3306	
				911.77	1.7742	
	DBH 001 TO 006 AVERAGE	4.98	6.20	303.92	0.5914	
		8.00	8.60	142.59	0.7155	1.4907
		10.00	12.60	136.57	1.0725	4.1947
		12.00	12.40	150.93	1.7055	7.4294
		14.00	13.70	131.94	2.0307	10.4005
		16.00	14.90	70.37	1.4144	8.1852
		18.00	15.50	45.37	1.1541	7.0417
				677.77	8.0927	38.7422
	DBH 008-018 AVERAGE	12.33	12.38	112.96	1.3488	6.4570
		20.00	17.00	23.61	0.7414	4.9708
		22.00	17.20	6.20	0.2357	1.5925
		24.00	20.60	7.41	0.3352	2.6550
				37.22	1.3123	9.2183
	DBH 020 TO 024 AVERAGE	21.18	17.75	12.41	0.4374	3.0728
		26.00	17.40	3.70	0.1967	1.2914
		28.00	22.00	3.70	0.2281	1.8842
				7.40	0.4248	3.1756
	DBH 028 TO 999 AVERAGE	27.04	19.70	3.70	0.2124	1.5878
	SPECIES TOTAL DBH 008+ AVERAGE	13.16	12.71	722.39 65.67	9.8298 0.8936	51.1361 4.6487
	SPECIES TOTAL DBH 001+ AVERAGE	9.51	9.08	1634.16 116.73	11.6040 0.8289	51.1361 4.6487

Figure 5. Portion of the Saskatchewan stand and stock tables from computer printouts. A listing of the map codes is in Appendix 2.

Continued on next page.

Figure 5. continued.

NO. OF PLOTS/ SUBPLOTS	SPECIES	D.B.H. CLASS (CM.)	AVG.HEIGHT	ALL CROWN CLASSES TREES/HA.	BASAL AREA/HA.	CU.M./HA.
18	JACK PINE	8.00	10.80	1.85	0.0093	0.0161
		10.00	9.00	1.85	0.0146	0.0323
		14.00	11.60	11.11	0.1711	0.6750
		16.00	12.70	5.56	0.1117	0.5188
		18.00	14.50	10.37	0.2638	1.4654
	DBH 008 TO 018 AVERAGE			30.74	0.5705	2.7076
		15.37	12.57	6.15	0.1141	0.5415
		20.00	14.90	10.37	0.3256	1.9118
		22.00	15.60	11.48	0.4365	2.7352
		24.00	20.00	5.19	0.2410	1.9416
	DBH 020 TO 024 AVERAGE			27.04	1.0031	6.5886
		21.74	16.18	9.01	0.3344	2.1962
		26.00	20.70	4.07	0.2210	1.8518
		28.00	22.00	5.56	0.3421	3.0417
		30.00	22.80	2.22	0.1571	1.4379
		32.00	23.00	3.33	0.2681	2.4472
		34.00	23.10	1.11	0.1009	0.9125
		38.00	23.20	1.11	0.1260	1.1061
	DBH 026 TO 999 AVERAGE			17.40	1.2152	10.7972
		29.82	22.14	2.90	0.2025	1.7995
	SPECIES TOTAL DBH 008+ AVERAGE			75.18	2.7888	20.0934
		21.73	16.08	5.37	0.1992	1.4352
	SPECIES TOTAL DBH 001+ AVERAGE			75.18	2.7888	20.0934
		21.73	16.08	5.37	0.1992	1.4352
17	BALSAM FIR	4.00	5.00	29.41	0.0370	
	DBH 001 TO 006 AVERAGE			29.41	0.0370	
		4.00	5.00	29.41	0.0370	
		8.00	14.30	33.33	0.1672	0.8078
		10.00	12.80	37.50	0.2946	1.3408
		12.00	14.00	25.00	0.2825	1.4690
		14.00	15.80	18.06	0.2774	1.7069
		16.00	16.00	10.65	0.2140	1.3923
		18.00	17.00	3.24	0.0823	0.5715
	DBH 008 TO 018 AVERAGE			127.78	1.1195	7.2583
		11.46	14.24	21.31	0.2748	1.7917
		20.00	20.00	3.24	0.1018	0.8437
		22.00	18.70	1.39	0.0528	0.4145
	DBH 020 TO 024 AVERAGE			4.63	0.1546	1.2582
		20.60	19.61	2.32	0.0773	0.6291
	SPECIES TOTAL DBH 008+ AVERAGE			132.41	1.4731	8.5165
		11.90	14.43	16.55	0.1841	1.0646
	SPECIES TOTAL DBH 001+ AVERAGE			161.82	1.5101	8.5165
		10.90	12.71	17.98	0.1678	1.0646
18	ASPEN	10.00	18.70	1.39	0.0110	0.0620
		14.00	18.50	4.07	0.0627	0.4376
		16.00	19.80	7.41	0.1489	1.1495
		18.00	24.50	7.59	0.1930	1.8984
	DBH 008 TO 018 AVERAGE			20.46	0.4156	3.5415
		16.07	21.21	5.12	0.1039	0.8854
		20.00	25.30	5.74	0.1803	1.8527
		22.00	24.40	4.07	0.1548	1.5414
		24.00	20.30	7.41	0.3348	2.7738
	DBH 020 TO 024 AVERAGE			17.22	0.6699	6.1679
		22.26	22.94	5.74	0.2233	2.0560
		26.00	22.40	4.81	0.2557	2.3151
		28.00	23.10	1.85	0.1141	1.0559
		32.00	20.50	1.85	0.1480	1.1904
		34.00	24.90	1.85	0.1622	1.5859
	DBH 026 TO 999 AVERAGE			10.36	0.6800	6.1473
		28.91	22.63	2.59	0.1700	1.5368
	SPECIES TOTAL DBH 008+ AVERAGE			48.04	1.7655	15.8567
		21.62	22.14	4.37	0.1605	1.4415
	SPECIES TOTAL DBH 001+ AVERAGE			48.04	1.7655	15.8567
		21.62	22.14	4.37	0.1605	1.4415

Continued on next page.

Figure 5. continued.

NO. OF PLOTS/ SUBPLOTS	SPECIES	D.B.H. CLASS (CM.)	AVG.HEIGHT	ALL CROWN CLASSES TREES/HA.	BASAL AREA/HA.	CU.M./HA.
18	BLACK POPLAR	8.00	9.60	3.70	0.0185	0.0358
		10.00	10.40	11.11	0.0874	0.2265
		12.00	13.40	5.56	0.0628	0.2371
		14.00	13.20	7.41	0.1141	0.4590
		16.00	16.10	5.56	0.1117	0.5775
		18.00	20.80	3.70	0.0943	0.6586
	DBH 008 TO 018 AVERAGE	12.97	13.22	37.04 6.17	0.4888 0.0815	2.1925 0.3654
		20.00	20.60	9.26	0.2907	2.0475
		22.00	24.00	1.85	0.0704	0.5876
		24.00	21.10	5.56	0.2511	1.8701
	DBH 020 TO 024 AVERAGE	21.62	21.14	16.67 5.56	0.6122 0.2041	4.5052 1.5017
		26.00	19.60	3.70	0.1967	1.3645
		28.00	19.60	3.70	0.2281	1.5857
		30.00	19.70	3.70	0.2557	1.7884
		36.00	19.90	1.85	0.1802	1.2580
	DBH 026 TO 999 AVERAGE	29.08	19.67	12.90 3.24	0.8607 0.2152	5.9966 1.4992
	SPECIES TOTAL DBH 008+ AVERAGE	19.35	18.46	68.66 5.13	1.9617 0.1509	12.6943 0.9765
	SPECIES TOTAL DBH 001+ AVERAGE	19.35	18.46	68.66 5.13	1.9617 0.1509	12.6943 0.9765
18	WHITE BIRCH	8.00	10.40	7.14	0.0370	0.0862
		10.00	10.50	6.94	0.0547	0.1668
		16.00	16.80	1.39	0.0279	0.1777
	DBH 008 TO 018 AVERAGE	9.84	11.01	15.94 5.25	0.1196 0.0399	0.4307 0.1436
		24.00	19.20	3.70	0.1674	1.2721
	DBH 020 TO 024 AVERAGE	24.00	19.20	3.70 3.70	0.1674 0.1674	1.2721 1.2721
	SPECIES TOTAL DBH 008+ AVERAGE	13.72	12.57	19.44 4.86	0.2870 0.0718	1.7028 0.4257
	SPECIES TOTAL DBH 001+ AVERAGE	13.72	12.57	19.44 4.86	0.2870 0.0718	1.7028 0.4257
	F.C.T. TOTAL DBH 008+			1703.02	33.5714	229.9547
	F.C.T. TOTAL DBH 001+			2761.85	35.5027	229.9547

Where: S = over 75% softwood

20 = average heights of 17.5 m to 22.5 m

D = crown closure of 55% to 80%

WS = predominate species of White Spruce

GROSS MERCHANTABLE STOCK AND STAND TABLE FOR MANAGEMENT UNIT 31 (TAB 31) SUBTYPE 54[a] SITE 1[b] CT.CL.4[c] CR.CL.3[d] PAGE 299 PAGE C 8

DIA (cm)		R.PINE	J.PINE	B.SPR	W.SPR	B.FIR	LARCH	CEDAR	T.ASPEN	B.POP	BIRCH	OTHER H	TOTAL
10	CU.MET.(m^3)			2.4227							0.3921		2.8148
	TR.CT.[e]			109.8232							6.9765		126.7997
SUBTOTAL	T			2.4227							0.3921		2.8148
	TR.CT.			109.8232							16.9765		126.7997
12	CU.MET.			2.9465					0.8248				3.5713
	TR.CT.			57.2020					11.7892				68.9912
SUBTOTAL	T			2.9465					0.8248				3.5713
	TR.CT.			57.2020					11.7892				68.9912
14	CU.MET.		1.2350	7.0734					2.6455		1.6091		12.5630
	TR.CT.		17.3228	100.6554					34.9131		25.9842		179.0755
16	CU.MET.		2.8180	4.7037					4.8935				12.4152
	TR.CT.		28.3530	42.5295					39.9449				110.8274
18	CU.MET.		2.9471	4.5423					5.0140		0.7225		13.2259
	TR.CT.		19.3474	34.0736					30.4612		5.2396		89.1218
SUBTOTAL	T		7.0011	16.3894					12.5530		2.3316		38.2051
	TR.CT.		65.0232	177.4585					105.3192		31.2238		379.0247
20	CU.MET.		0.9891	8.2504					3.4008				12.5403
	TR.CT.		4.2441	43.0912					17.4988				64.8341
22	CU.MET.			3.6244		0.7748			3.4217				7.8209
	TR.CT.			14.0736		3.6075			14.0736				31.6547
24	CU.MET.		3.4893	2.7263					1.5770				7.7946
	TR.CT.		12.0317	8.6108					5.8946				26.5371
SUBTOTAL	T		4.3784	14.6031		0.7748			8.3995				28.1558
	TR.CT.		16.3258	65.7756		3.6075			37.4670				123.0759
26	CU.MET.		1.5507	2.1365					1.8708				5.5578
	TR.CT.		4.8400	5.0226					5.2275				15.0901
28	CU.MET.		2.8005	1.6821					6.2211				10.7037
	TR.CT.		6.6593	4.1839					15.5006				26.3438
30	CU.MET.								1.8520				1.8520
	TR.CT.								3.9048				3.9048
32	CU.MET.								2.7395				2.7395
	TR.CT.								5.1908				5.1908
34	CU.MET.			1.9423					1.7135				3.6558
	TR.CT.			3.0274					3.0274				6.0548
36	CU.MET.								1.9678				1.9678
	TR.CT.								2.8198				2.8198
38	CU.MET.		0.9753										0.9753
	TR.CT.		1.1161										1.1161
SUBTOTAL	T		5.3265	5.7609					18.3843				27.4517
	TR.CT.		12.6154	12.2339					35.4709				60.3202
GD.TOTAL	T		18.7060	42.0528		0.7748			37.9418		2.7237		100.1987
	TR.CT.		93.9844	422.4932		3.5075			190.0483		48.2003		758.2117

BASED ON 15 PLOTS CONTAINING 132 TREES

Codes:

a. SUBTYPE 54. Softwood-Hardwood (M), Black Spruce 50% or less of total local area by species; 2nd major species Jack Pine, 3rd Hardwood.

b. Site 1. between FRESH and VERY MOIST classes for best timber growth.

c. CT. CL. 4. cut class 4 is a mature stand.

d. CR. CL. 3. 51% to 70% crown closure.

e. TR. CT. tree count.

Figure 6. Portion of the Manitoba standard and stock tables from microfiche. A listing of the map codes is in Appendix 3.

SAMPLE REGION	DENSITY	HEIGHT	COVER SPECIES 1	2	3	4	COMMERCIALISM	SIZE	WHITE SPRUCE m³	WHITE SPRUCE STEMS	BLACK SPRUCE m³	BLACK SPRUCE STEMS	PINE m³	PINE STEMS	TREMBLING ASPEN m³	TREMBLING ASPEN STEMS
2	4	1	P	Sw		At	UNCOM-	SMALL	1.5	37	0.3	10	3.0	54	0.0	0
							MERCIAL	MEDIUM	5.1	53	1.3	16	9.2	87	0.5	4
								LARGE	3.1	23	1.3	9	5.4	32	0.0	0
								V.LARGE	6.8	19	0.2	1	8.8	23	26.3	52
2	3	1	Sw	P	At		LUMBER	SMALL	1.2	13	1.2	19	0.2	6	0.0	0
								MEDIUM	2.5	28	0.7	11	0.3	2	0.0	0
								LARGE	7.7	26	0.7	4	0.0	0	0.2	1
								V.LARGE	12.3	19	0.0	0	46.0	28	121.0	173
2	4	2	Sb			Sw	UNCOM-	SMALL	2.0	30	11.4	199	2.2	32	0.0	0
							MERCIAL	MEDIUM	8.4	70	17.5	183	3.1	25	0.2	2
								LARGE	9.2	42	8.4	50	6.1	26	0.6	3
								V.LARGE	37.1	74	4.7	16	30.6	62	12.5	19
2	4	2	P			Sw	POUND-	SMALL	0.6	9	1.4	27	17.1	237	0.0	1
							WOOD	MEDIUM	1.5	15	4.3	46	53.3	442	0.7	6
								LARGE	1.9	10	1.5	9	41.7	184	0.9	4
								V.LARGE	7.4	14	0.9	3	43.8	100	3.2	7
2	4	2	P	At		Sb	POUND-	SMALL	0.0	0	0.5	9	9.8	155	4.3	57
							WOOD	MEDIUM	1.2	9	1.5	17	32.7	298	14.1	121
								LARGE	0.8	4	3.3	22	30.0	145	112.7	63
								V.LARGE	4.8	9	2.7	9	26.2	61	21.9	50

Where: Density: 3 = 51% to 70% crown closure; 4 = 71% to 100% crown closure.

Height: 1 = 6.1 m to 12.0 m; 2 = 12.1 m to 18.0 m.

Figure 7. An extract from the Alberta forest stratum data tape. A listing of the map codes is in Appendix 4.

SAMPLE REGION	DENSITY	HEIGHT	COVER SPECIES 1	2	3	4	SPEC. ASSOC-CIATION	SIZE	WHITE SPRUCE m^3	WHITE SPRUCE STEMS	BLACK SPRUCE m^3	BLACK SPRUCE STEMS	PINE m^3	PINE STEMS	TREMBLING ASPEN m^3	TREMBLING ASPEN STEMS
2	3	2	P	Sb	At		S	SMALL	0.0	0	2.9	51	0.8	13	0.0	0
								MEDIUM	0.3	7	6.1	76	0.7	5	0.0	0
								LARGE	0.5	4	2.1	15	0.4	2	0.0	0
								V.LARGE	1.8	2	3.2	11	0.0	0	0.0	0
2	5	3	Sw	P		Sb	S	SMALL	0.0	0	0.0	0	7.7	106	0.0	0
								MEDIUM	6.3	79	0.0	0	17.5	148	4.1	33
								LARGE	4.6	21	8.8	59	18.6	99	0.0	0
								V.LARGE	20.3	51	2.2	9	69.4	100	8.4	20
2	7	3	P	At		Sw	S	SMALL	0.0	0	0.0	0	4.4	59	1.1	15
								MEDIUM	1.4	14	1.5	14	18.4	142	5.7	48
								LARGE	1.9	9	3.2	18	32.8	139	0.9	24
								V.LARGE	22.3	41	2.5	8	59.8	118	12.1	28
2	3	2	Sw			At	S	SMALL	1.3	25	0.5	9	0.4	6	0.1	2
								MEDIUM	3.4	36	0.9	10	1.2	11	0.8	8
								LARGE	2.2	15	0.5	3	1.3	8	0.4	2
								V.LARGE	3.3	13	0.5	2	0.9	3	0.5	1
2	1	1	P	Sb		At	S	SMALL	0.0	0	0.0	0	0.0	0	0.0	0
								MEDIUM	0.0	0	0.0	0	0.6	6	0.0	0
								LARGE	0.0	0	0.9	8	1.1	7	0.0	0
								V.LARGE	0.0	0	0.0	0	2.3	7	0.0	0

Where: Density: 1 = 1% to 20%; 3 = 21% to 40%; 5 = 41% to 60%; 7 = 61% to 80% crown closure.

Height: 1 = 2.51 m to 7.5 m; 2 = 7.51 m to 12.5 m; 3 = 12.51 m to 17.5 m.

Species Association: S = Softwood

Figure 8. An extract from the Alberta forest data tape, which was used for the Northwest Territories. A listing of the map codes is in Appendix 5.

entered into the PDP 11/60 minicomputer as a volume table for each map sheet. The appropriate volume to biomass conversion tables by tree species (i.e., above ground) and size class (i.e., with foliage) were already entered (Singh 1984).

The attribute manipulations by polygon for each sample map sheet were as follows:

Attribute sorting: After digitizing on SHL-RAMS and correcting for map errors, the polygons were sorted by species association, height class, density class, and the three cover species. The polygon identification numbers and areas were stored for future use.

Data storage: The data were transferred to a PDP 11/60 minicomputer, which stored and printed them.

Biomass computations: Volume estimates by polygon were computed using the volume tables derived from the stand and stock tables for each stratum (i.e., map sheet in this instance). This was done by matching the polygon attribute listings to the volume table variables on the PDP 11/60 minicomputer as follows:

1. Where map attributes matched volume table variables, the biomass tables for the identified species were applied. These values were then summed to determine the total estimated biomass weight per hectare for the polygon, which was then multiplied by the area of the polygon to tabulate the total biomass estimate for the polygon.

2. When an exact match was not found, the dominant and subdominant cover species were reversed, and the search for a match was rerun. If there was then a match, the procedure in step 1 was followed.

3. If there was still no match, the second cover species was deleted, and the search was rerun on the first cover species. If there was then a match with the volume table, the procedure in step 1 was followed.

4. The last resort was to print out the polygon attribute information, compare it to the original map, and make whatever corrections were necessary. There still being no match, a similar species was substituted, and the calculations were done manually with a desk calculator.

Biomass mapping: The computed biomass weight per hectare and total biomass weight per polygon then became additional attributes by polygon and were entered in the DDF on SHL-RAMS.

Programs could be written on the PDP 11/60 minicomputer to sort and compute various attributes from the location-specific data base, but this was not deemed appropriate for this evaluation. Instead, with the SHL-RAMS Version-2, the biomass should be computed before the polygons are digitized. The DDF could then be established to accommodate these new attributes, and all the sorting required would be done on the SHL-RAMS.

In addition, volume estimates were used in biomass computations instead of the mean stem heights and diameter data that are usually available in stand and stock tables. The use of volume tables was a trade-off for data processing and consistency reasons. Mean stem height and diameter equations for biomass estimations also exist (Singh 1982) and were the basis for the conversion tables (Singh 1984). These equations should be used for any supplementary sampling that is specifically done for the production of biomass estimations.

RESULTS

Tabular listing of biomass data by polygon for the four sample map sheets are presented in Appendix 2 (Saskatchewan, UTM Grid Cell Z13 E45 N597); Appendix 3 (Manitoba, Twp. 25, Rng. 9, E.P.M.); Appendix 4 (Alberta, Twp. 44, Rng. 16, W5 Mer.); and Appendix 5 (Northwest Territories, NTS 75D/4 SW 1/4). The summary biomass statistics presented in Table 5 are for the independent map samples only and are not representative of average provincial or territorial stocking.

Proof hard-copy biomass inventory maps were produced using the Ramtech Printer/Plotter for Saskatchewan, Manitoba, Alberta, and the Northwest Territories (Figs. 9–12). These maps are a condensation of the tabular data in Appendixes 2–5.

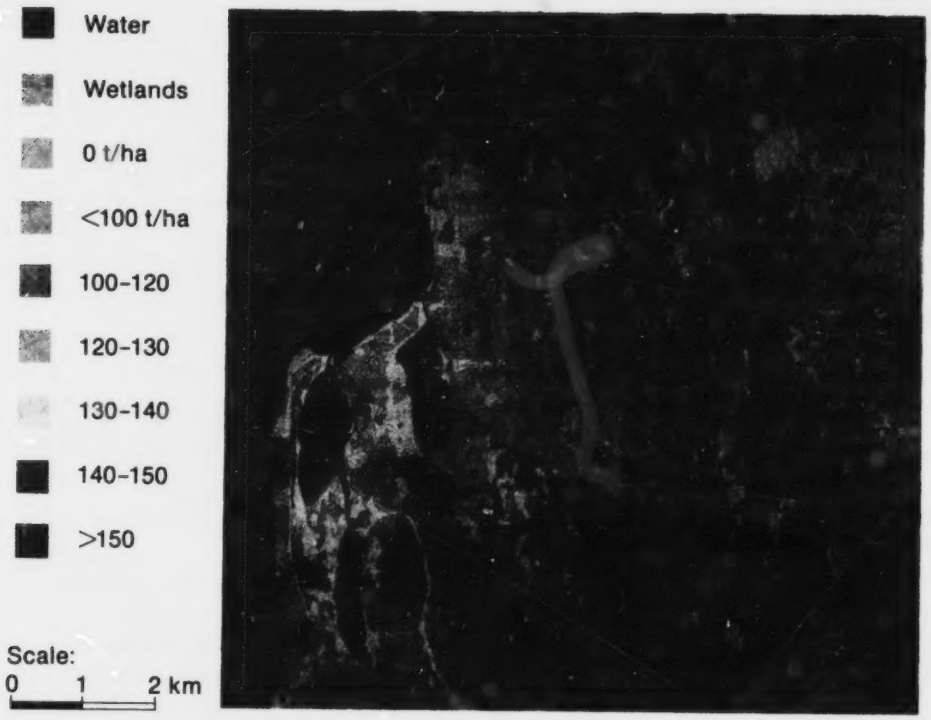

Figure 9. Biomass inventory for Saskatchewan UTM Z13 E45 N597, Bittern Lake.

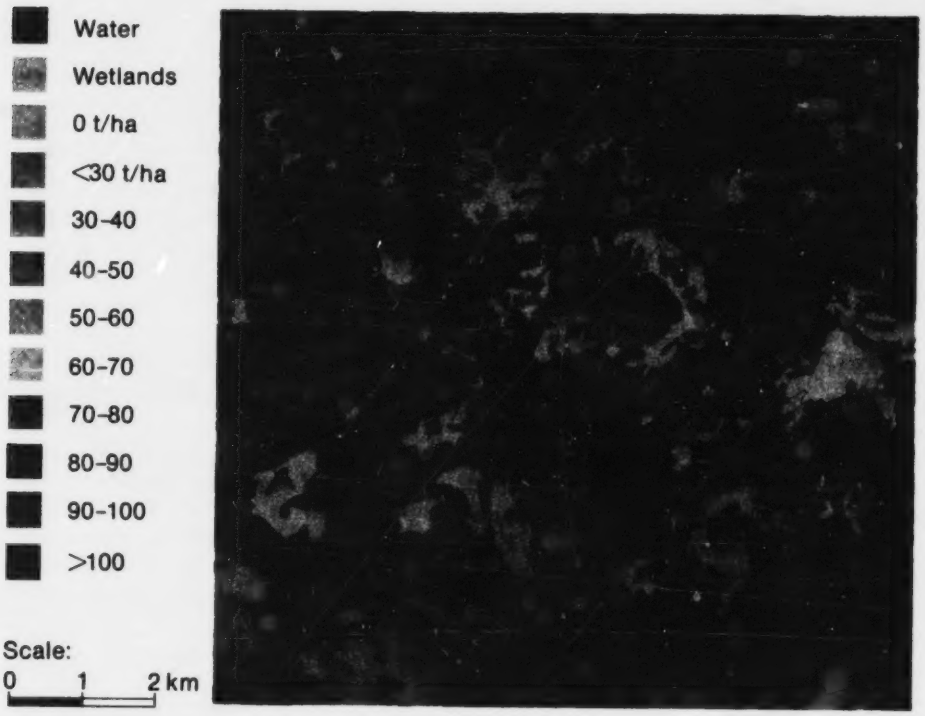

Figure 10. Biomass inventory for Manitoba Twp. 25, Rng. 9, E.P.M., 1977, Management Unit 31.

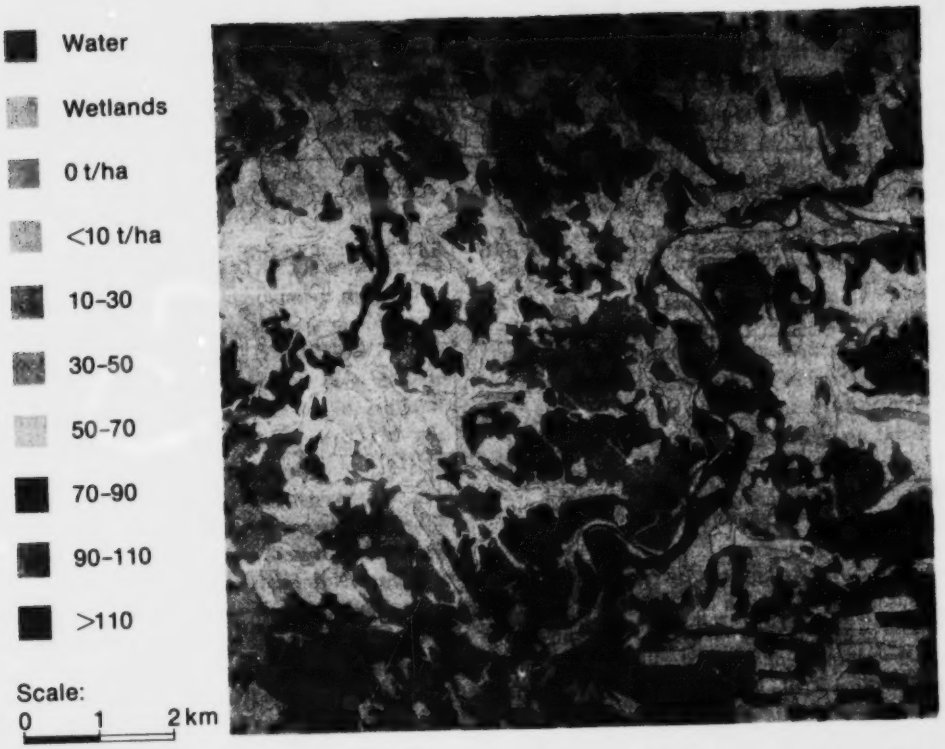

Figure 11. Biomass inventory for Alberta Twp. 44, Rng. 16, W5 Mer., Blackstone River.

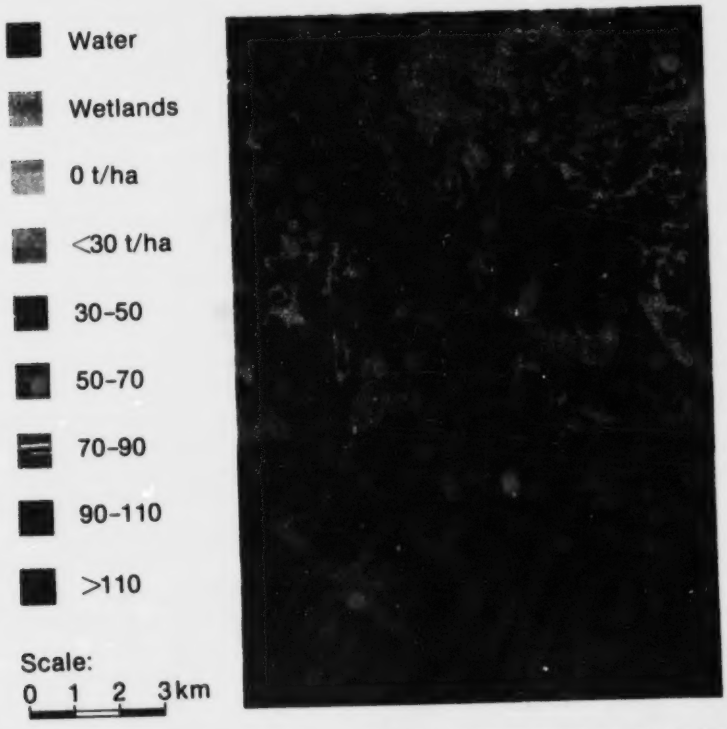

Figure 12. Biomass inventory for Fort Smith, NWT (NTS 75 D/4 SW 1/4).

Table 5. Summary of biomass statistics for the sample inventory maps

	NWT	Manitoba	Alberta	Saskatchewan
Total forested area (ha)	7 041	7 372	6 558	4 951
Total biomass (t)	339 348	531 360	434 006	471 154
Average biomass (t/ha)	48	72	66	95

DISCUSSION

The Forest Base

The area currently covered by forest maps in the Western and Northern Region of Canada is 2 049 000 km² (Bonnor 1982). Over 10 000 forest inventory maps, and therefore biomass inventory maps, of the type used in this study would be required to cover all the predominantly forest land of the prairie provinces. As many again would be required for the Northwest Territories. Suitable forest inventory maps and supporting stand and stock tables for forest management purposes do not yet exist for more than half of the above total area. Forestry agencies in Alberta, Saskatchewan, and Manitoba are placing considerable emphasis on compiling and updating their forest inventories. These provinces are also in various stages of establishing GIS facilities of their own to process, store, retrieve, and manipulate the huge amounts of data involved. Forest management in the Northwest Territories is at present the responsibility of the federal Department of Indian Affairs and Northern Development, where forest inventory mapping and sampling is not nearly as advanced as in the prairie provinces because of lower forest productivities and population densities. Forest biomass for fuel is generally a more important consideration in the Northwest Territories than on the prairies, however. There is potential for more cooperation among all forestry agencies for all types of forest assessments in such a huge forested area.

There is a tremendous diversity of plant species, climate conditions, soil characteristics, and resultant biomass accumulations in the Western and Northern Region. As has been shown, the forests of the region lie principally in boreal and transitional forest regions; there are parklands and alpine regions to the south and west and tundra to the north. The forest cover is largely heterogeneous throughout, although forest inventory maps do present homogeneous polygons for the forest cover. Numerous assumptions and trade-offs were required to use effectively the large amounts of existing, location-specific maps and supporting data for the production of realistic biomass estimates for such large and diverse areas. Unmerchantable stands, as well as all stand species combinations, were not itemized in the stand and stock tables. The substitutions made might have produced slightly higher biomass estimations than would be computed with more complete sampling data. Quantitative sample data simply does not exist for all, or even most, tree species and undergrowth combinations; nevertheless, the forest inventory maps and supporting data provide the best information available for the creation of data bases and computations of biomass estimates over such a large area.

Supplementary sampling for biomass could be acquired for more complete tabulations in the future. In practical terms, however, quantitative biomass samples pertaining to lesser vegetation and regeneration areas might have to be systematically included with normal forest and ecological plot measurements to be economically feasible. Various types of remote sensing applications might also be developed to provide supplementary biomass estimates in a location-specific format. A raster format referenced to the UTM grid could be a valuable common base for such integration.

No account has been made of the significant subsurface biomass potential of the large accumulations of peatlands colocated with substantial areas of forests in the region. There is insufficient location-specific data for these extensive peatlands. Location-specific and quantitative peatland classifications should eventually be included in a biomass data base of a GIS. Because the

forest is a dynamic entity, keeping existing forest inventories up to date is no small task. Monitoring changes in biomass over time is even more difficult. Automation is essential for planning and management purposes.

Computer Mapping

The SHL-RAMS portion of MARS is considered a modular component that can be modified or replaced to significantly improve system capabilities in line with technical developments. The SHL-RAMS was a prototype system. Software modifications have been made to the system, but it is still too slow for operational requirements; nevertheless, the polygon to UTM grid conversion software specifically developed for NoFC is a valuable capability that is worth retaining.

Functional digital-map exchanges and remote sensing integration for monitoring significant changes to the ground cover should be encouraged. Developments of integrated digital image analysis and computer mapping systems are only beginning. The future potential for total environmental monitoring in particular is significant. The compilation of location-specific and compatible data bases of current environmental knowledge is critical for integrated system applications.

Remote Sensing

In addition to providing interim forest cover maps, remote sensing offers considerable location-specific information on the dynamics of large forested areas such as clear-cutting, burned lands, mortality from insects and diseases, and flooded areas. This information is valuable for economically updating forest, and subsequently biomass, inventories, particularly when detailed forest surveys are completed in 10-, 20-, and 30-year cycles. It should also be desirable to enhance normal forest inventory plot documentation by including more total biomass measurements to improve estimates. Efficient GIS operations are necessary to integrate the multiple sources of relevant information in a cost-effective manner.

The utility of using digital image analyses of satellite imagery for a form of reconnaissance mapping of remote areas has been demonstrated at NoFC (Kirby and Chow 1982). A portion of a geometrically corrected digital LANDSAT image was classified on the PDP 11/60 minicomputer using the Goldberg-Schlein unsupervised classification software developed at the Canada Centre for Remote Sensing in Ottawa, Ontario. A 300 × 300 pixel area, covering about 15 × 15 km on the ground, was selected in the Fort Smith area of the Northwest Territories. The area was classified into 14 themes on the PDP 11/60 minicomputer. Background knowledge of the area permitted several of these themes to be combined to produce the map in Figure 13 through MARS and the Ramtech printer. Figure 13 also contains an outline of the overlapping western edge of the Northwest Territories sample biomass map for comparison purposes. The computer processing time required on the PDP 11/60 minicomputer, however, was considered excessive. Figure 13 is in a raster format, whereas forest maps are normally in vector (i.e., lines) format, but the classified image could serve as a preliminary reconnaissance map for planning purposes.

CONCLUSIONS

The aggregate forest biomass calculations for each of the sample forest inventory map sheets are realistic for those particular locations. The principal advantages of map summarizations of lengthy columns of data are that the data are consolidated and placed in a geographic perspective. Such maps also can be related to other environmental features on a common map base, either visually or through GIS analyses. This has obvious advantages for management, planning, and policy making, especially if the subsequent data base could be used to produce a desk-top sized, colored map sheet on a cartographic-quality plotter.

It is difficult to accurately apply broadly applicable volume-to-biomass tables over such a large, ecologically diverse forest region. It is much more difficult to derive stand-specific equations. Data acquisition and interpretation, with field sampling, must still be done; these traditional operations should become even more critical. They are the basis for the base-data information and the increased scrutiny of classifications implicit in automated data base compilations and analyses (e.g., for biomass mapping). Caution is required in manipulating existing area classifications and supporting data to produce maps and tables for which the original field survey was not intended, particularly for such a large area. The use of specialized remote sensing techniques, such as large-scale air-photo sampling, can help to overcome such problems.

Increased public awareness and political interest also play an important role. Renewed emphasis on, and

streamlining of, traditional forest inventory operations is required for effective use of GIS as a basis for forest management decisions.

With today's emphasis on increased productivity, new tools are required. A GIS has an immediate potential for functionally upgrading forest management information systems. The technology is evolving at a high rate, and such systems should approach the efficiency and utility of modern and technically much simpler word processors in the near future. In practical terms, these developments should provide increased forest and environmental information within constrained budgets.

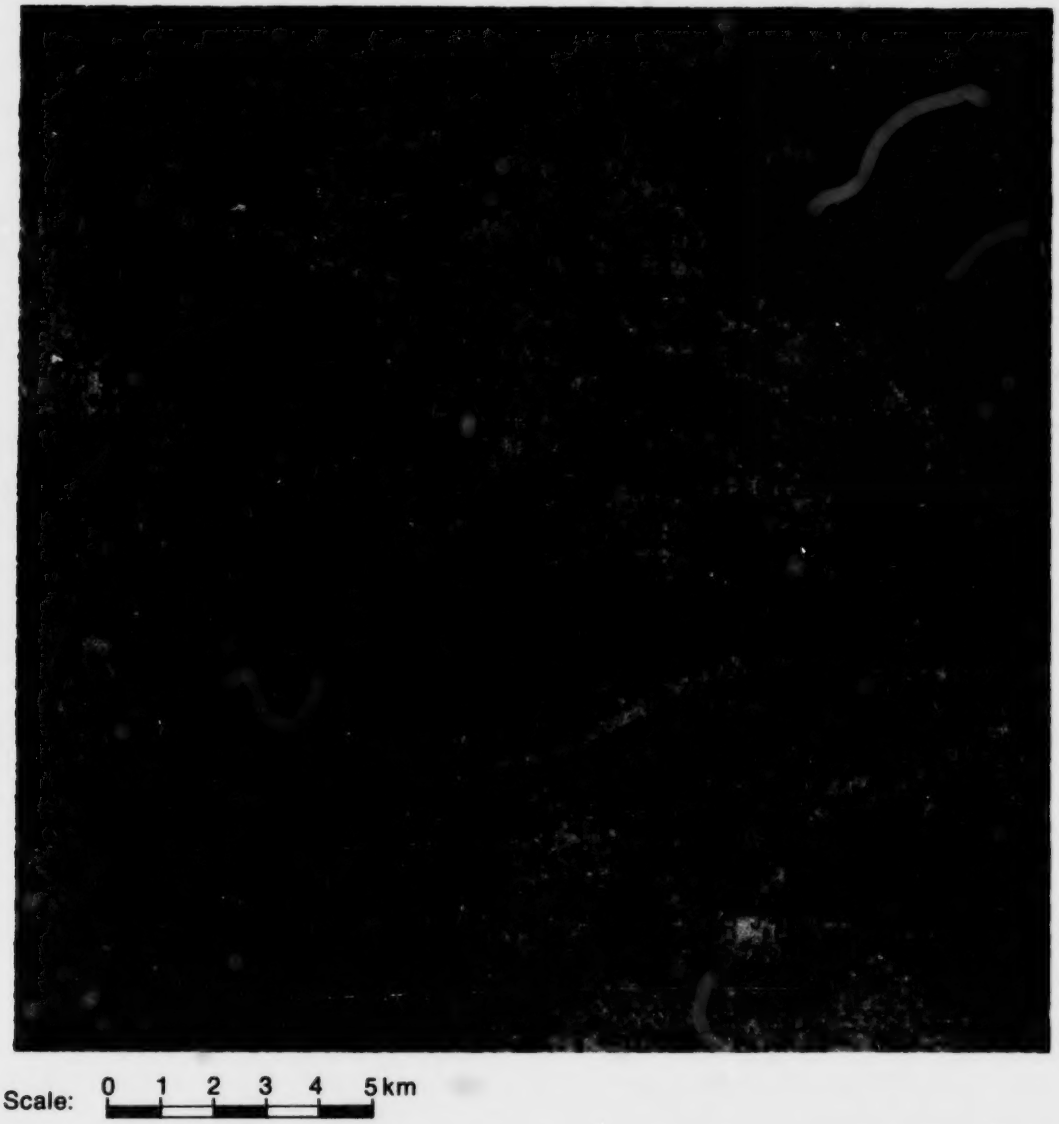

Figure 13. Unsupervised classification of a digitally corrected LANDSAT image with 50 × 50 m pixels. The overlapping edge of the Northwest Territories sample biomass map is outlined on the right. The color classes are green, Softwood; pink, Hardwood; black, Mixed wood; yellow, Treed muskeg; white, Grasslands/bare soil; light blue, Wetlands; and blue/purple, Water/asphalt.

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APPENDIX 1

SUMMARY OF UNIVERSAL TOPOGRAPHIC MAP (UTM) GRID CELL (AREA) REFERENCE RULES

APPENDIX 1

SUMMARY OF UNIVERSAL TOPOGRAPHIC MAP (UTM) GRID CELL (AREA) REFERENCE RULES

1. *ZEN number sequence*

   Significant digits in an area reference must be grouped in the following sequence:

   ZONE EASTING NORTHING

2. *Southwest corner reference*

   All UTM area references are to the southwest corner of the UTM grid cell, whether it is a 1 × 1 m or a 100 × 100 km grid, if the trailing zeros (insignificant digits) are added to Easting and Northing.

3. *Reference digits determine grid cell size*

   If two digits are allotted to the Zone number, the number of significant digits in Easting and Northing determines the grid cell size (Figure A). Each additional digit added to Easting and Northing (in concert) decreases the linear dimensions of the grid cell by a factor of 10 and the area by a factor of 100. For example, there are seven digits in a 10 × 10 km grid cell reference in Canada—two for Zone, two for Easting, and three for Northing. Likewise, there are fifteen digits in a 1 × 1 m grid cell (or point, to the nearest metre) reference number.

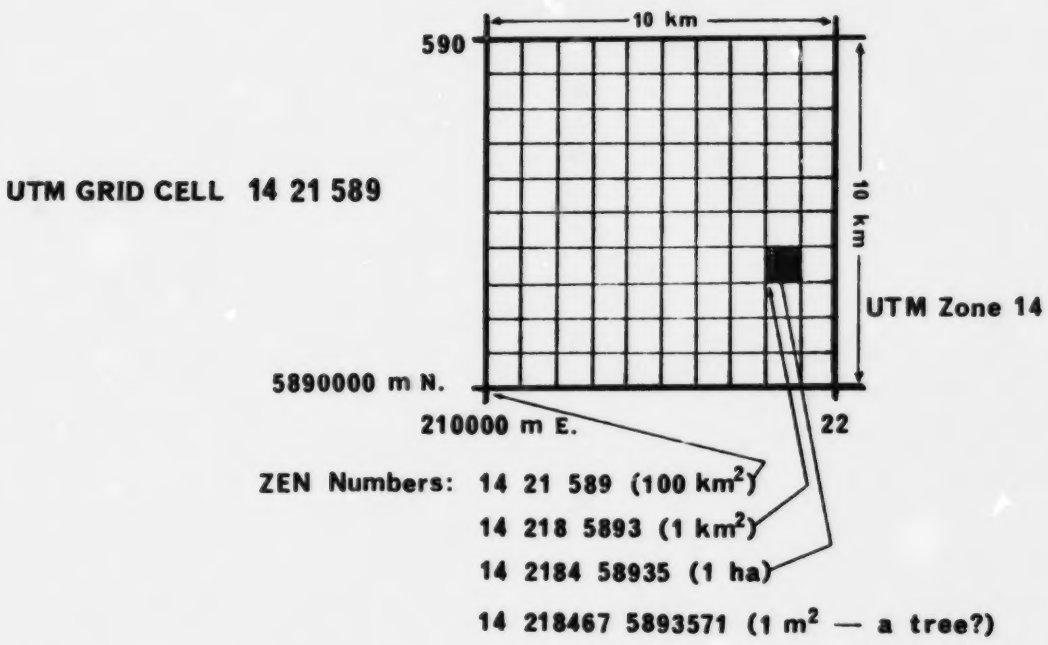

Figure A. Universal Topographic Map (UTM) grid cell reference example.

APPENDIX 2

BIOMASS DATA FOR SASKATCHEWAN SAMPLE MAP

APPENDIX 2

BIOMASS DATA FOR SASKATCHEWAN SAMPLE MAP (UTM Zone 13 E45 N597)

TABLE LEGEND

POLYGON ID:	Only polygons containing forest cover are listed.	
CENTROID UTM:	UTM reference, to the nearest hectare, of the nominal polygon centroid	
AREA:	of polygons in hectares	
SPECIES ASSOCIATION:	S	Softwood
	SH	Mixed wood (softwood dominant)
	HS	Mixed wood (hardwood dominant)
	H	Hardwood
HEIGHT CLASS:	5	2.5 to 7.5 m
	10	7.5 to 12.5 m
	15	12.5 to 17.5 m
	20	17.5 to 22.5 m
	25	22.5 m and over
DENSITY CLASS:	A	10 to 30% crown closure
	B	30 to 55% crown closure
	C	55 to 80% crown closure
	D	80 to 100% crown closure
COVER SPECIES:	1	Dominant species
	2	Second dominant/codominant species
	3	Understory
	BPO	*Populus balsamifera* (balsam poplar)
	BS	*Picea mariana* (Mill.) B.S.P. (black spruce)
	JP	*Pinus banksiana* Lamb. (jack pine)
	TA	*Populus tremuloides* Michx. (trembling aspen)
	WB	*Betula papyrifera* Marsh. (white birch)
	WS	*Picea glauca* (Moench) Voss (white spruce)
BIOMASS:	Estimated dry weight of standing forest (i.e., with diameter at breast height >0) by hectare and by polygon	

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
1	4515	59797	1.58	HS	15	D	TA	WS		157.7	249.2
2	4516	59799	1.16	HS	25	C	TA	WS		130.3	151.2
3	4517	59798	1.84	S	15	C	WS	BS		114.9	211.4
5	4517	59799	0.55	S	5	D	BS			103.8	57.1
5	4522	59799	0.24	S	5	D	BS			103.8	24.9
6	4516	59795	5.71	HS	25	C	TA	WS		130.3	744.2
7	4517	59793	3.09	HS	20	B	TA	WS		82.2	253.9
8	4520	59798	0.91	S	5	B	BS			54.3	49.4
9	4521	59798	2.53	S	10	D	BS			109.5	276.9
10	4521	59794	2.23	S	5	C	BS			80.6	179.7
12	4522	59799	0.12	S	10	D	BS			109.5	13.1
13	4522	59799	0.40	S	15	D	JP	BS		121.5	48.6
14	4522	59794	4.42	S	15	C	BS	WS		98.2	433.9
15	4526	59784	19.49	HS	20	D	TA	WS		132.1	2573.7
16	4524	59787	8.35	S	20	C	BS			103.3	862.2
17	4517	59791	2.02	HS	15	C	TA	WS		99.5	200.9
18	4517	59790	2.67	HS	20	B	TA	WS		82.2	219.4
19	4517	59790	3.22	SH	20	C	WS	TA		113.3	364.9
20	4525	59799	1.23	HS	25	C	TA	WS		130.3	160.3
20	4530	59795	4.11	SH	20	C	JP	BS	TA	115.6	474.9
21	4527	59799	10.42	S	15	D	BS			127.6	1329.8
22	4528	59794	2.13	SH	20	C	JP	WS	TA	115.6	246.1
23	4529	59798	1.38	S	15	D	JP	BS		121.5	167.7
24	4533	59785	33.76	S	10	D	BS			109.5	3695.5
26	4528	59795	1.47	SH	20	D	WS	TA		134.7	198.1
27	4529	59794	2.83	SH	20	C	WS	TA		113.3	320.7
28	4530	59793	1.50	S	15	C	WS	BS		114.9	172.4
29	4526	59793	6.49	HS	20	C	TA	WS		121.7	790.0
30	4526	59788	7.98	HS	20	D	TA	WS		132.1	1053.8
31	4528	59798	11.17	SH	15	D	WS	TA		118.4	1322.7
32	4528	59798	0.38	H	15	D	TA			115.2	43.8
33	4527	59784	4.75	S	15	B	BS			83.3	395.7
34	4528	59783	7.14	S	10	B	BS			63.3	451.6
35	4527	59783	1.44	S	5	C	BS			80.6	116.1
36	4528	59778	5.95	S	5	D	BS			103.8	617.5
37	4529	59774	5.57	S	10	D	BS			109.5	609.7
38	4528	59776	5.11	S	5	C	BS			80.6	411.8
39	4530	59783	9.00	S	5	C	BS			80.6	725.3
39	4530	59783	5.30	S	10	C	BS			96.0	508.7
40	4530	59788	2.30	S	15	B	BS	WS		83.3	191.6
41	4530	59792	2.01	HS	20	D	TA	WS		132.1	265.4
42	4532	59788	4.38	HS	20	D	TA	WS		132.1	578.4
43	4533	59787	5.07	HS	20	D	TA	WS		132.1	669.5
44	4535	59788	14.04	SH	25	C	WS	TA		119.6	1679.2
45	4535	59786	4.17	HS	20	D	TA	WS		132.1	550.6
46	4536	59789	2.64	S	15	B	JP	BS		98.2	259.3
47	4536	59792	2.89	HS	25	A	TA	WS		76.7	221.6
48	4534	59793	6.89	SH	25	B	TA	WS		108.3	746.0
49	4532	59793	10.31	SH	20	D	WS	TA		134.7	1389.2
50	4532	59799	0.37	S	15	D	JP	BS		121.5	45.0
51	4532	59796	3.52	S	15	D	BS			127.6	449.2
52	4533	59796	5.90	S	15	D	BS			127.6	753.0
53	4538	59794	15.52	S	25	C	JP	WS		130.6	2026.2
55	4537	59797	2.16	SH	15	D	JP	TA	WS	118.2	255.3
56	4539	59799	0.25	S	15	D	BS			127.6	31.9
57	4539	59794	3.86	HS	25	B	TA	WS		108.3	417.9
58	4540	59794	3.23	S	15	D	BS			127.6	412.2
60	4543	59793	1.07	S	20	C	JP	BS		115.6	123.6
61	4544	59799	0.81	S	25	D	JP			150.3	121.7
62	4544	59797	11.34	SH	25	C	JP	WS	TA	130.6	1480.5
63	4545	59793	7.31	S	20	C	JP	WS		115.6	844.7
64	4545	59796	4.77	SH	20	C	WS	TA		113.3	540.5
66	4539	59791	0.98	SH	20	C	JP	TA		112.6	110.4
67	4539	59788	11.25	S	20	C	JP	WS		115.6	1300.0
68	4539	59784	39.99	SH	25	D	WS	TA		135.1	5404.5
69	4533	59783	3.17	S	10	B	BS			63.3	200.5
70	4527	59781	0.55	S	5	C	BS			80.6	44.3
71	4534	59779	1.20	S	10	C	BS			96.0	115.2
72	4533	59782	0.99	S	10	C	BS			96.0	95.0
73	4535	59782	1.59	S	5	C	BS			80.6	128.1
74	4536	59781	2.95	S	10	C	JP	BS		106.1	313.0
75	4539	59782	1.67	S	15	D	BS			127.6	213.1
76	4538	59781	2.05	SH	5	D	TA	BS		92.6	189.9
77	4538	59781	3.68	S	15	C	BS	WS		98.2	361.2
78	4535	59778	11.77	HS	5	D	TA	JP	BS	70.9	833.9

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
79	4537	59778	0.97	H	10	C	TA			92.5	89.8
80	4536	59776	2.43	S	10	D	JP	BS		118.8	288.7
81	4538	59775	5.96	S	25	B	BS	WS		78.3	466.7
82	4539	59777	3.37	SH	20	C	WS	TA		113.3	381.9
83	4538	59776	0.56	SH	15	B	WS	TA		88.9	49.8
84	4535	59776	0.56	H	10	C	TA			92.5	51.8
85	4541	59769	26.60	HS	20	D	TA	WS		132.1	3512.5
86	4540	59780	8.79	HS	25	D	TA	WS		179.3	1575.9
87	4544	59776	6.71	SH	20	D	WS	TA		134.7	904.1
88	4544	59778	4.11	HS	20	D	TA	WS		132.1	542.7
89	4546	59777	6.90	S	20	C	WS			121.2	836.0
90	4564	59776	3.23	S	5	B	JP	BS		71.7	231.6
91	4547	59779	3.13	S	10	C	JP	BS		106.1	332.1
92	4543	59783	4.95	HS	20	C	TA	WS		121.7	602.5
93	4555	59784	15.07	S	10	C	BS			96.0	1446.5
94	4547	59781	1.00	S	10	D	BS			109.5	109.5
95	4547	59782	3.51	SH	10	D	WS	TA		130.9	459.6
96	4547	59790	1.58	S	20	B	WS			97.1	153.4
97	4547	59789	5.18	HS	20	D	TA	WS		132.1	684.0
98	4550	59767	7.37	HS	25	C	TA	WS		130.3	960.5
99	4547	59794	7.34	HS	20	B	TA	JP	WS	87.8	644.7
100	4548	59795	4.01	SH	15	D	WS	TA		118.4	474.8
101	4549	59792	14.41	S	15	D	BS			127.6	1839.0
102	4549	59789	26.68	HS	25	C	TA	WS		130.3	3477.1
103	4549	59799	0.58	S	15	C	WS			114.9	66.7
104	4550	59798	0.61	HS	20	C	TA	WS		121.7	74.2
106	4552	59793	14.71	SH	15	B	WS	TA		88.9	1307.4
107	4551	59791	1.55	S	20	C	WS			121.2	187.8
109	4551	59791	3.40	HS	25	B	TA	WS		108.3	368.1
110	4551	59788	4.14	HS	20	A	TA	WS		60.7	251.5
111	4554	59786	8.19	HS	20	C	TA	WS		121.7	996.9
112	4553	59786	2.29	S	5	B	BS			54.3	124.3
113	4553	59779	33.25	SH	25	D	TA	WS		179.3	5961.1
114	4552	59783	1.40	S	20	C	WS			121.2	169.6
115	4550	597729	36.08	HS	20	D	TA	WS		132.1	4764.4
116	4551	59779	8.17	S	15	C	WS	BS		114.9	938.9
117	4554	59779	1.66	SH	20	C	WS	TA		113.3	188.1
118	4555	59776	3.73	S	15	C	WS	BS		114.9	428.6
119	4561	59773	5.42	SH	20	D	JP	TA		126.4	685.2
120	4563	59773	25.40	HS	20	D	TA	WS		132.1	3354.1
121	4556	59778	5.36	HS	25	C	TA	WS		130.3	698.5
122	4561	59784	13.00	HS	20	D	TA	WS		132.1	1716.7
123	4558	59787	21.30	SH	20	D	WS	TA		134.7	2870.0
124	4566	59779	9.71	SH	20	D	TA	WS		132.1	1282.2
125	4558	59787	2.61	S	15	D	BS	WS		127.6	333.1
126	4569	59787	3.25	SH	20	D	JP	TA	WS	126.4	410.9
127	4568	59780	4.45	S	25	C	JP	WS		130.6	581.0
128	4567	59782	5.63	S	15	B	BS	WS		83.3	469.0
129	4566	59781	2.50	S	15	D	WS	BS		140.0	349.9
130	4564	59784	1.74	S	10	D	BS			109.5	190.5
131	4567	59786	21.63	S	25	B	JP	WS		99.3	2148.0
132	4566	59790	6.23	SH	25	B	WS	TA		80.1	498.8
133	4564	59789	2.52	HS	20	A	TA	WS		60.7	153.1
134	4564	59789	2.39	S	25	C	JP	WS		130.6	312.0
135	4561	59790	6.21	S	25	C	JP	WS		130.6	810.7
135	4561	59790	27.57	S	25	C	JP	WS		130.6	3599.3
136	4557	59788	1.26	S	20	B	WS			97.1	122.4
137	4556	59787	3.26	S	15	D	BS	WS		127.6	416.1
138	4577	59785	1.80	S	5	C	BS			80.6	145.1
139	4556	59793	0.24	SH	15	D	BS	TA	WS	118.4	28.4
140	4556	59789	3.25	S	15	D	BS			127.6	414.8
141	4557	59793	1.06	H	20	C	TA			115.8	122.8
142	4560	59792	1.25	S	20	C	WS			121.2	151.4
142	4554	59798	0.94	H	20	D	TA			126.0	118.5
143	4552	59796	2.22	S	10	C	JP			63/7	141.4
144	4559	59796	1.18	S	15	C	WS			114.9	135.6
145	4556	59797	2.35	S	25	C	JP	WS		130.6	306.8
146	4557	59795	4.70	HS	20	B	TA	WS		82.2	386.2
147	4558	59796	3.98	SH	15	C	JP	TA	WB	81.0	322.2
148	4558	59797	2.68	HS	25	D	TA	WS		179.3	480.5
150	4559	59796	0.33	HS	20	B	TA	WS		82.2	27.1
151	4559	59796	0.76	S	25	D	BS			132.9	101.0
151	4559	59796	9.83	S	25	D	JP			150.3	1477.1
152	4560	59795	3.22	HS	20	C	TA	WS		121.7	391.9
154	4566	59793	3.03	HS	20	C	TA	WS		121.7	368.8

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
155	4565	59794	4.77	S	25	D	JP	WS		157.1	749.3
156	4565	59797	1.44	HS	20	C	JP	WS		115.6	166.4
157	4566	59799	0.65	S	25	C	JP	WS		130.6	84.9
158	4567	59797	8.65	S	25	D	JP	WS		157.1	1358.8
159	4567	59793	12.97	S	25	C	JP	WS		130.6	1693.3
160	4569	59794	1.31	SH	20	C	TA	WS		121.7	159.5
161	4570	59797	3.85	S	25	B	JP	WS		99.3	382.3
162	4570	59798	2.64	S	25	D	JP	WS		157.1	414.7
163	4568	59790	20.26	S	25	C	JP	WS		130.6	2645.0
164	4572	59799	4.41	S	10	C	BS			96.0	423.3
165	4572	59794	5.90	S	10	D	BS			109.5	645.8
166	4573	59799	0.47	S	15	C	BS			98.2	46.1
167	4574	59799	1.39	S	25	D	BS			132.9	184.8
168	4573	59795	3.19	S	15	D	BS			127.6	407.1
169	4573	59796	1.42	S	10		BS			63.3	89.8
170	4574	59795	0.46	S	10	C	BS			96.0	44.2
171	4575	59797	0.88	S	10	D	BS			109.5	96.3
172	4574	59790	6.80	S	5	C	BS			80.6	548.0
173	4574	59786	7.46	S	10	D	BS			109.5	816.6
174	4572	59788	5.14	S	20	C	JP	WS		115.6	593.9
175	4571	59787	1.65	S	10	B	BS			63.3	104.4
176	4571	59787	6.25	S	20	D	JP			107.9	674.5
177	4570	59782	2.62	S	25	C	JP			136.5	357.7
178	4571	59784	2.24	S	5	D	BS			103.8	232.5
179	4573	59778	6.34	S	10	D	BS			109.5	694.0
180	4571	59775	15.44	S	20	D	JP	WS		125.4	1936.9
181	4572	59778	1.58	S	15	C	JP	WS		107.2	169.3
182	4573	59780	3.20	S	5	D	BS			103.8	332.1
183	4569	59784	1.89	H	20	B	TA			90.7	171.4
184	4573	59775	24.50	S	20	D	JP	WS		125.4	3073.5
185	4587	59782	2.34	S	10	B	BS			63.3	148.0
185	4587	59782	7.84	S	5	B	BS			54.3	425.6
186	4573	59785	2.87	S	5	C	BS			80.6	231.3
187	4576	59784	1.17	S	15	C	BS			98.2	114.9
189	4576	59790	1.92	S	5	D	BS			103.8	199.3
190	4576	59791	2.17	S	10	B	BS			63.3	137.3
191	4577	59791	0.83	S	15	C	JP	BS		107.2	88.9
192	4559	59793	3.29	S	10	C	BS	TL		62.1	204.1
193	4577	59793	7.05	S	25	C	JP	WS		130.6	920.4
195	4580	59786	7.21	S	20	D	JP	WS		125.4	904.5
196	4580	59786	17.50	S	10	C	BS			96.0	1679.8
197	4579	59790	0.96	S	15	C	JP	BS		107.2	102.9
198	4578	59785	6.72	S	25	D	JP	WS		157.1	1055.6
199	4576	59777	35.56	S	25	C	JP	WS		130.6	4642.5
200	4580	59777	1.65	S	15	C	BS			98.2	162.0
201	4582	59776	0.94	S	15	C	JP	BS		107.2	100.7
202	4582	59777	5.08	S	10	B	BS			63.3	321.3
203	4573	59770	12.65	S	10	D	BS			109.5	1384.7
204	4582	59782	2.70	S	10	B	BS			63.3	170.8
205	4584	59782	2.05	S	15	D	JP	BS		121.5	249.1
206	4583	59780	2.98	S	10	D	BS			109.5	326.2
207	4585	59778	4.79	S	5	C	BS			80.6	386.0
208	4587	59771	15.77	S	10	C	BS			96.0	1513.7
209	4587	59775	0.69	S	15	C	JP	BS		107.2	73.9
210	4590	59783	12.69	S	10	C	BS			96.0	1218.1
211	4589	59786	2.86	S	15	C	JP	BS		107.2	306.5
212	4589	59787	1.51	S	10	A	WS			78.7	118.8
213	4587	59787	2.57	S	20	C	JP	WS		115.6	297.0
214	4588	59785	10.21	S	10	D	BS			109.5	1117.6
215	4589	59790	2.53	S	15	C	BS			98.2	248.4
216	4586	59788	5.36	S	10	C	BS	TL	TA	62.1	332.6
217	4586	59785	2.71	S	10	D	BS			109.5	296.6
218	4583	59796	2.45	S	5	C	BS			80.6	197.4
220	4584	59786	0.54	S	5	B	BS			54.3	29.3
221	4584	59786	0.72	S	10	D	BS			109.5	78.8
222	4585	59786	1.05	S	10	B	BS			63.3	66.4
223	4585	59786	1.72	S	5	C	BS			80.6	138.6
224	4590	59792	1.72	S	15	C	BS			98.2	168.8
225	4587	59793	1.31	S	5	C	BS			80.6	105.6
226	4586	59794	11.25	S	20	D	JP	WS		125.4	1411.3
227	4588	59793	5.07	S	10	D	BS			109.5	555.0
228	4584	59796	1.97	S	5	D	BS			103.8	204.4
229	4584	59797	1.38	S	20	C	JP	WS		115.6	159.5
230	4585	59799	0.97	S	15	D	JP	BS		121.5	117.9
231	4587	59796	1.82	S	15	D	JP	BS		121.5	221.1

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
233	4589	59793	14.50	S	10	B	BS			63.3	917.2
234	4592	59797	1.31	S	10	B	BS			63.3	82.9
238	4599	59782	1.70	S	10	D	BS			109.5	186.1
239	4559	59785	0.28	S	5	C	BS			80.6	22.6
240	4598	59787	0.61	S	10	C	BS			96.0	58.6
241	4575	59713	8.13	SH	15	B	JP	TA		53.2	432.8
241	4575	59713	0.54	S	10	C	BS			96.0	51.8
243	4598	59789	10.14	S	10	C	BS			96.0	973.3
244	4593	59792	4.99	S	10	B	BS			63.3	315.6
245	4590	59794	3.75	S	10	C	BS			96.0	359.9
246	4597	59795	6.33	S	10	B	BS			63.3	400.4
247	4599	59795	0.60	S	10	B	BS			63.3	38.0
248	4527	59775	3.13	HS	15	B	TA			75.7	237.0
249	4527	59776	1.22	S	10	C	BS	WS		96.0	117.1
249	4527	59776	5.98	S	15	C	BS			98.2	587.0
250	4528	59772	1.13	S	10	C	BS			96.0	108.5
251	4529	59772	4.67	S	5	D	BS			103.8	484.7
252	4530	59773	2.17	S	5	C	BS			80.6	174.9
253	4530	59771	2.38	S	10	B	BS			63.3	150.5
255	4532	59764	21.08	S	5	C	BS			80.6	1698.9
256	4532	59767	4.80	S	10	D	BS			109.5	525.4
258	4530	59760	2.50	S	10	D	BS			109.5	273.7
259	4529	59758	1.99	S	15	C	BS			98.2	195.3
260	4529	59765	3.70	H	5	C	TA			85.3	315.6
261	4529	59761	1.35	H	5	D	TA			92.3	124.5
262	4528	59759	0.97	S	15	B	BS	WS		83.3	80.8
263	4535	59763	4.81	S	10	B	BS			63.3	304.3
264	4540	59766	12.93	S	10	D	JP	BS		118.8	1536.3
265	4537	59773	0.29	S	10	D	JP			81.2	23.5
266	4539	59775	0.54	H	10	D	TA			94.7	51.1
267	4540	59773	1.90	SH	20	C	JP	WS	TA	115.6	219.6
268	4539	59772	0.89	H	10	D	TA			94.7	84.3
270	4538	59766	1.65	S	10	D	JP			81.2	133.9
271	4538	59764	1.47	S	10	D	JP			81.2	119.3
272	4540	59763	1.36	S	15	A	BS			52.6	71.5
273	4539	59761	2.89	S	10	D	JP			81.2	234.6
275	4539	59760	1.27	HS	10	C	JP	TA	WS	74.3	94.3
277	4541	59759	1.74	H	10	D	TA			94.7	164.7
278	4540	59762	3.88	H	10	B	WB			47.2	183.3
280	4542	59774	3.54	HS	10	C	TA	BS		96.9	343.1
281	4542	59772	2.11	S	5	B	TA			70.1	147.8
281	4542	59772	4.42	SH	20	D	TA	JP	WS	132.1	583.7
282	4543	59768	4.51	S	5	D	JP			59.7	269.2
283	4546	59761	60.06	S	5	B	JP			22.6	1358.0
284	4545	59775	2.76	SH	10	D	JP	BS	TA	118.8	327.9
285	4542	59765	0.39	S	15	C	JP			85.3	33.3
286	4541	59764	0.67	H	10	D	TA			94.7	63.4
287	4548	59775	2.82	S	10	B	BS			63.3	178.4
288	4542	59760	0.93	S	15	B	JP	WS		98.2	91.3
289	4542	59759	1.76	SH	10	D	TA	JP		105.8	186.2
290	4543	59761	1.33	HS	10	C	TA	BS		96.9	128.9
292	4544	59760	0.68	S	15	C	JP			85.3	58.0
293	4544	59759	0.68	H	10	C	MM			61.0	41.5
294	4546	59761	1.99	S	5	B	JP			22.6	45.0
295	4546	59762	1.61	S	5	B	JP			22.6	36.4
296	4548	59760	1.98	S	5	C	JP	BS		92.1	182.4
297	4549	59758	0.73	S	5	D	JP			59.7	43.6
298	4550	59758	4.40	S	5	B	JP	BS		71.7	315.5
299	4550	59762	0.98	S	5	C	JP			43.3	42.4
300	4546	59774	1.21	S	15	D	JP	BS		121.5	147.0
301	4549	59774	0.85	S	20	B	WS			97.1	82.5
302	4550	59769	4.72	S	15	D	JP	WS		121.5	573.5
303	4548	59776	3.60	S	10	D	BS			109.5	394.1
304	4548	59778	1.01	H	10	C	TA			92.5	93.5
306	4553	59765	36.98	SH	25	D	WS	TA		135.1	4997.7
307	4550	59764	4.63	S	15	D	BS	WS		127.6	590.9
308	4547	59764	5.82	S	5	B	JP			22.6	131.6
309	4551	59767	0.92	H	10	D	TA			94.7	87.1
310	4553	59763	1.66	H	10	D	TA			94.7	157.1
311	4553	59761	1.04	S	15	C	WS			114.9	119.5
312	4556	59763	1.85	HS	10	C	JP	TA	BS	74.3	137.4
313	4554	59763	1.03	S	10	D	JP			81.2	83.6
314	4557	59759	0.39	S	10	C	BS			96.0	37.4
315	4555	59761	3.83	S	5	C	JP			43.3	165.7
316	4559	59760	2.86	H	5	B	WB			35.5	101.6

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
317	4559	59766	12.35	S	20	C	JP	WS		115.6	1427.1
318	4554	59769	6.86	SH	20	C	TA	WS		121.7	835.0
319	4557	59767	0.28	H	15	C	TA			83.3	23.3
320	4556	59767	3.51	S	15	D	BS			127.6	448.0
321	4556	59774	1.91	SH	10	C	WS	TA		107.6	205.6
322	4557	59773	3.97	S	20	C	JP	WS		115.6	458.7
323	4557	59771	2.49	SH	10	B	TA	WB	WS	71.7	178.6
324	4557	59769	4.38	S	15	C	TL	BS		71.9	314.9
325	4544	59767	1.03	S	10	B	WB			47.2	48.7
326	4557	59767	1.09	S	10	D	BS			109.5	119.3
327	4562	59765	0.35	HS	10	D	JP	TA	BS	87.1	30.5
328	4561	59749	42.16	S	10	D	JP			81.2	3421.9
329	4560	59760	1.79	S	5	B	JP	BS		71.7	128.4
330	4558	59771	0.76	S	20	A	JP			62.8	47.7
331	4558	59768	3.82	S	20	C	JP	WS		115.6	441.4
332	4559	59767	0.86	S	15	C	BS			98.2	84.4
333	4560	59767	3.78	SH	5	C	JP	BS	WB	92.1	348.1
334	4559	59762	23.06	S	5	D	JP			59.7	1376.6
335	4562	59770	3.84	SH	25	C	TA	JP	WS	110.9	425.9
336	4562	59769	1.76	H	10	C	TA			92.5	162.8
338	4563	59766	5.27	H	10	D	TA			94.7	498.9
339	4562	59772	0.39	S	25	B	JP	TA	WS	113.6	44.3
340	4565	59774	2.26	S	10	D	JP			81.2	183.4
341	4566	59773	1.54	S	10	C	JP			63.7	98.1
342	4565	59767	2.02	HS	5	C	TA	BS		77.9	157.3
343	4564	59766	5.80	S	25	C	JP	WS		130.6	757.2
344	4562	59764	0.16	SH	20	C	JP	WS	TA	115.6	18.5
345	4563	59760	12.05	SH	20	C	JP	WS	TA	115.6	1392.4
346	4564	59759	3.67	SH	10	D	JP	TA	BS	87.1	319.6
347	4564	59758	3.49	H	10	D	TA			94.7	330.4
348	4567	59757	4.57	H	10	C	TA			92.5	422.9
349	4567	59757	0.20	S	10	D	JP			81.2	16.2
350	4566	59770	0.37	S	10	D	JP			81.2	30.0
351	4566	59770	2.12	S	5	B	JP	BS		71.7	152.0
352	4566	59767	2.35	S	10	C	JP			63.7	149.7
353	4566	59768	1.82	HS	5	D	TA	BS		92.6	168.6
354	4566	59765	1.76	SH	10	D	TA	BS		118.6	208.7
355	4566	59764	2.21	HS	10	C	JP	TA	BS	74.3	164.1
356	4566	59762	4.17	S	10	D	JP			81.2	338.5
357	4565	59760	3.10	S	10	D	JP			81.2	251.6
358	4568	59758	1.07	H	5	D	WB			46.2	49.4
359	4567	59759	1.80	SH	10	B	JP	TA	BS	64.8	116.6
360	4570	59760	0.97	S	15	B	BS			83.3	80.8
361	4569	59763	3.40	S	10	B	BS			63.3	215.1
362	4570	59759	0.96	S	15	C	TL	BS		71.9	69.0
363	4571	59759	2.72	S	10	C	TL	BS		62.1	168.8
364	4569	59775	0.34	S	15	C	BS			98.2	33.4
365	4568	59771	3.66	S	5	C	BS			80.6	295.0
366	4569	59767	0.50	S	5	C	BS	WS		80.6	40.3
367	4572	59770	2.12	S	10	C	BS			96.0	203.5
368	4558	59758	4.04	SH	5	C	BS	WB		54.6	220.7
369	4577	59774	6.54	S	10	C	BS			96.0	627.7
370	4574	59763	2.78	S	10	B	BS			63.3	175.8
371	4573	59766	1.96	S	20	C	JP	BS		115.6	226.5
372	4573	59765	2.29	S	15	A	JP	BS		58.8	134.7
373	4574	59764	6.52	S	20	B	JP	BS		95.5	622.4
374	4575	59764	0.58	S	10	A	BS			46.3	26.8
375	4575	59763	3.85	S	15	C	JP	BS		107.2	412.5
376	4575	59762	2.23	S	10	A	BS			46.3	103.2
377	4580	59760	1.34	S	15	C	BS			98.2	131.5
378	4578	59764	1.61	S	5	B	BS			54.3	87.4
379	4576	59762	28.17	S	20	B	JP	BS		95.5	2689.0
379	4576	59762	1.70	S	10	C	BS			96.0	163.2
380	4575	59769	2.67	S	15	D	JP	BS		121.5	324.4
381	4576	59770	1.59	S	5	C	BS			80.6	128.1
382	4579	59775	3.38	S	20	C	JP	BS		115.6	390.6
383	4581	59774	3.62	S	10	B	BS			63.3	229.0
384	4580	59771	4.85	S	15	D	BS			127.6	619.0
385	4583	59771	3.52	S	5	C	BS			80.6	283.7
386	4581	59761	6.36	S	15	A	BS			52.6	334.6
387	4582	59761	11.18	S	10	C	BS			96.0	1073.1
388	4582	59763	9.39	S	15	C	BS			98.2	921.7
392	4584	59760	4.31	S	5	C	TL			54.6	235.4
393	4588	59774	1.68	S	15	C	JP	BS		107.2	180.0
394	4589	59774	2.17	S	5	B	BS			54.3	117.8

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
395	4590	59773	1.81	S	10	D	BS			109.5	198.1
396	4592	59773	3.60	S	10	B	BS			63.6	227.7
397	4589	59768	11.46	S	5	C	BS			80.6	923.6
398	4591	59767	7.82	S	10	C	BS			96.0	750.6
399	4585	59761	13.60	S	10	B	BS			63.6	860.3
400	4587	59761	4.02	S	10	B	TL			46.0	184.9
401	4588	59760	1.60	S	15	C	BS			98.2	157.1
402	4590	59759	7.23	S	10	C	BS			96.0	694.0
403	4510	59759	6.12	SH	15	C	WB	WS	TA	57.7	353.1
404	4508	59739	6.32	HS	15	C	WB	TA	BS	83.3	526.4
405	4509	59739	6.32	HS	10	C	TA	BS		96.9	612.5
406	4510	59746	3.87	SH	10	D	BS	WB	TA	109.5	423.6
407	4510	59744	5.90	SH	10	C	BS	WB	TA	96.0	566.3
412	4516	59750	0.98	H	5	D	TA	WB		92.6	90.7
413	4516	59749	1.34	H	15	B	BP			63.9	85.7
414	4517	59749	11.50	HS	15	D	TA	WB	BS	115.2	1324.9
415	4518	59745	8.58	SH	20	B	BS	WS	TA	88.5	759.0
416	4518	59744	8.68	H	15	D	TA			115.2	1000.0
417	4520	59742	4.38	HS	15	C	TA	WS		99.5	435.6
418	4520	59740	3.89	H	15	D	TA			115.2	448.2
419	4520	59740	1.11	SH	10	C	BS	TA		107.6	119.5
420	4523	59738	0.96	S	10	B	BS			63.3	60.7
421	4525	59738	0.21	S	10	B	BS			63.3	13.3
422	4522	59739	4.43	S	5	C	BS			80.6	357.0
423	4522	59740	1.17	H	10	D	TA			94.7	110.8
424	4522	59741	2.10	S	5	C	BS	WS		80.6	169.2
425	4522	59743	1.12	S	5	C	BS			80.6	90.3
426	4523	59744	0.46	S	10	D	BS			109.5	50.4
427	4521	59744	2.60	S	5	D	BS			103.8	269.8
428	4520	59743	0.66	S	10	D	BS			109.5	72.2
429	4522	59745	12.64	H	15	D	TA			115.2	1456.3
430	4522	59746	0.57	S	5	D	BS			103.8	59.2
431	4523	59747	4.24	SH	20	B	BS	WS	TA	88.5	375.1
432	4521	59752	0.90	S	10	C	BS			96.0	86.4
433	4525	59753	0.96	S	5	B	BS			54.3	52.1
434	4525	59755	1.51	HS	10	D	TA	BS		118.6	179.0
435	4530	59755	3.52	S	15	B	BS			83.3	293.2
437	4532	59750	6.88	S	15	A	BS			52.6	361.9
438	4531	59751	2.19	S	10	C	BS			96.0	210.2
439	4534	59755	2.23	S	5	B	BS			54.3	121.1
440	4532	59755	1.37	S	5	D	BS			103.8	142.2
441	4532	59748	1.31	S	10	C	BS			96.0	125.7
443	4534	59743	7.60	S	5	B	BS			54.3	412.6
444	4534	59742	4.25	S	10	C	BS	WS		96.0	407.9
445	4535	59753	0.90	S	10	C	BS			96.0	86.4
446	4535	59759	1.70	S	5	B	BS			54.3	92.3
447	4537	59751	10.42	S	10	C	BS			96.0	1000.2
448	4541	59748	34.11	S	10	D	JP			81.2	2768.2
449	4543	59783	2.43	SH	20	B	JP	TA		73.3	178.1
450	4541	59757	2.48	SH	20	C	WS	TA		113.3	281.0
451	4541	95756	3.15	SH	15	C	JP	TA	WS	81.0	255.0
452	4541	59751	3.77	SH	20	B	JP	WS	TA	95.5	359.9
453	4542	59752	1.90	SH	10	C	JP	BS	TA	106.1	201.6
454	4543	59753	0.81	S	15	C	JP			85.3	69.1
455	4543	59751	1.29	S	15	C	JP			85.3	110.0
456	4538	59748	1.65	SH	15	B	WS	WB		62.8	103.6
457	4538	59746	2.69	S	10	B	BS			63.3	170.2
458	4538	59744	3.94	S	5	C	BS			80.6	317.5
459	4535	59741	4.62	S	10	B	BS			63.3	292.2
460	4533	59734	16.13	S	15	B	BS			83.3	1343.7
461	4540	59743	5.95	S	10	D	JP	BS		118.8	707.0
462	4542	59748	0.95	S	15	B	BS			83.3	79.1
463	4542	59748	1.47	SH	10	C	JP	BS	TA	106.1	156.0
464	4550	59724	29.88	S	10	D	JP			81.2	2425.2
465	4544	59740	6.75	S	5	C	JP		BS	43.3	292.1
466	4546	59752	1.55	S	10	D	JP			81.2	125.8
467	4545	59753	1.06	S	10	D	JP			81.2	86.0
468	4546	59754	0.32	S	10	C	JP			63.7	20.4
468	4546	59754	0.54	S	5	C	JP	BS		92.1	49.7
469	4548	59748	1.40	S	10	A	JP		BS	27.4	38.4
470	4549	59749	1.70	S	5	C	BS			80.6	137.0
471	4548	59743	2.63	S	5	B	JP		BS	22.6	59.5
472	4549	59741	0.88	S	5	C	BS			80.6	70.9
473	4552	59743	1.31	S	5	C	JP	BS		92.1	120.7
474	4551	59741	0.85	S	5	B	BS			54.3	46.1

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475	4552	59740	0.93	S	5	C	JP	BS		92.1	85.7
476	4552	59746	14.22	S	10	D	JP			81.2	1154.2
477	4550	59746	0.67	S	5	B	BS			54.3	36.4
478	4550	59751	1.59	S	5	C	JP			43.3	68.8
481	4559	59755	29.92	S	10	D	JP			81.2	2428.5
482	4558	59727	79.48	S	10	D	JP			81.2	6451.0
483	4556	59754	3.88	S	10	C	JP	BS		106.1	411.6
484	4557	59750	0.90	S	10	B	JP	BS		96.5	86.8
485	4560	59756	3.95	SH	5	B	JP	WB	BS	71.7	283.3
486	4559	59751	4.79	SH	10	B	JP	BS	TA	96.5	462.1
487	4558	59746	3.74	SH	10	D	JP	TA		87.1	325.7
488	4560	59745	1.01	S	10	C	BS			96.0	96.9
489	4560	59747	0.56	H	10	C	TA			92.5	51.8
490	4559	59746	3.81	HS	15	C	TA	WS		99.5	378.9
491	4564	59740	11.48	S	10	D	JP			81.2	931.8
492	4571	59732	97.79	S	15	D	JP			99.2	9703.1
493	4564	59744	1.99	S	10	D	JP			81.2	161.5
494	4563	59745	3.45	S	10	C	JP	BS		106.1	366.0
495	4567	59744	9.58	S	15	C	JP			85.3	817.2
496	4566	59747	10.96	S	15	D	JP			99.2	1087.5
497	4563	59750	1.71	SH	5	C	BS	JP	WB	106.1	181.4
498	4563	59757	1.12	SH	10	C	JP	TA	BS	74.3	83.2
499	4564	59757	3.42	H	15	D	TA			115.2	394.0
500	4564	59754	3.28	S	10	D	JP			81.2	266.2
501	4567	59749	8.48	S	15	C	JP			95.3	723.4
502	4566	59755	2.13	S	10	D	JP			81.2	172.9
503	4561	59754	4.30	SH	10	B	JP	BS	TA	96.5	414.8
504	4554	59757	10.65	SH	10	C	JP	BS	TA	106.1	1129.9
505	4569	59757	1.10	S	10	D	JP			81.2	89.3
506	4567	59754	7.14	S	10	D	JP			81.2	579.5
507	4568	59750	5.22	S	15	D	JP			99.2	517.9
508	4569	59752	1.21	S	10	B	BS			63.3	76.5
510	4570	59749	0.43	H	10	B	TA			71.7	30.8
511	4568	59741	19.83	S	10	D	JP			81.2	1609.5
513	4572	59753	8.14	S	10	C	BS			96.0	781.3
514	4574	59755	1.46	S	10	B	BS			63.3	92.4
515	4575	59754	1.97	S	15	B	BS			83.3	164.1
516	4576	59751	5.55	S	10	B	BS			63.3	351.1
517	4573	59749	2.30	S	10	B	JP	BS		96.5	221.9
518	4571	59747	2.68	S	15	B	JP			65.0	174.2
519	4573	59746	0.92	S	15	B	JP			65.0	59.8
521	4576	59746	3.39	SH	10	B	JP	BS	WB	96.5	327.1
522	4574	59744	2.99	SH	15	B	TA	JP		83.8	250.6
523	4577	59742	6.05	S	15	C	JP			85.3	516.1
524	4576	59737	14.95	S	15	C	JP			85.3	1275.3
525	4579	59738	82.95	S	10	D	JP			81.2	6732.6
526	4578	59752	1.52	H	10	B	WB			47.2	71.8
527	4575	59757	17.42	S	5	C	TL			54.6	951.4
528	4582	59707	7.57	S	10	C	JP			63.7	482.1
528	4582	59750	4.04	S	15	C	BS			98.2	396.6
529	4582	59759	2.72	S	10	B	TL			46.0	125.1
530	4585	59757	3.31	S	5	C	BS			80.6	266.8
531	4591	59757	5.52	S	5	C	JP	BS		92.1	508.4
532	4597	59758	3.19	S	15	D	JP	BS		121.5	387.6
533	4599	59756	1.50	S	10	B	BS			63.3	94.9
534	4596	59754	2.25	S	5	B	BS			54.3	122.1
535	4597	59753	6.17	S	10	C	JP			63.7	393.0
536	4592	59754	3.33	S	10	A	JP			27.4	91.3
537	4589	59755	4.43	S	10	C	JP	BS		106.1	470.0
538	4585	59751	4.86	S	10	B	BS			63.3	307.4
539	4585	59747	8.10	S	5	C	BS			80.6	652.8
541	4586	59745	1.13	S	10	B	BS			63.3	71.5
542	4584	59744	4.01	S	15	D	JP			99.2	397.9
543	4583	59741	10.01	S	15	D	JP			99.2	993.2
544	4584	59740	2.94	HS	10	B	JP	TA	BS	64.8	190.4
545	4585	59725	34.62	S	15	D	JP			99.2	3435.1
546	4587	59740	3.30	S	10	B	JP			47.0	155.2
547	4585	59742	2.09	S	10	B	JP	BS		96.5	201.6
548	4589	59742	3.14	SH	5	C	WS	JP	BS	106.1	333.1
549	4585	59743	0.63	S	5	B	JP			22.6	14.2
550	4587	59743	1.21	S	10	B	BS			63.3	76.5
551	4593	59738	7.38	HS	10	B	JP	TA	BS	64.8	477.9
552	4595	59739	1.27	HS	10	C	TA	BS		96.9	123.1
553	4595	59741	1.81	S	5	C	BS			80.6	145.9
554	4592	59743	1.71	S	5	C	BS			80.6	137.8

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
555	4590	59744	2.35	S	10	B	JP	BS		96.5	226.7
556	4588	59745	17.28	S	15	D	JP			99.2	1714.6
557	4588	59746	0.84	S	5	B	JP			22.6	19.0
558	4588	59748	1.25	SH	5	B	JP	TA	BS	26.7	33.3
559	4587	59751	2.82	S	10	C	JP	BS		106.1	299.2
560	4591	59554	0.56	S	5	C	JP	BS		92.1	51.6
561	4592	59553	1.15	S	5	C	JP			43.3	49.8
562	4591	59752	3.29	S	10	C	JP			63.7	209.5
563	4593	59752	1.31	S	10	C	JP			63.7	83.4
564	4594	59751	16.04	S	10	A	JP			27.4	439.8
565	4591	59749	0.87	S	5	C	BS			80.6	70.1
566	4592	59748	4.81	S	10	B	BS			63.3	304.3
567	4594	59750	1.17	S	10	C	JP			63.7	74.5
568	4593	59751	1.40	S	10	C	JP			63.7	89.2
569	4599	59745	0.71	S	10	B	JP			47.0	33.4
570	4598	59745	4.78	S	10	C	JP			63.7	304.4
571	4592	59744	14.51	S	10	A	JP			27.4	397.9
572	4590	59747	2.43	S	5	B	JP	BS		71.7	174.3
573	4591	59746	1.71	H	5	C	JP	BS		92.1	157.5
574	4591	59745	4.25	S	15	D	JP			99.2	421.7
575	4597	59742	4.03	S	10	A	JP			27.4	110.5
576	4595	59743	1.52	S	10	B	JP			47.0	71.5
577	4597	59739	4.65	S	5	C	BS			80.6	374.7
578	4598	59742	3.90	S	10	C	JP	BS		106.1	413.8
579	4508	59735	9.08	SH	15	C	BF	WB	TA	57.7	523.9
580	4510	59732	0.98	SH	15	D	TA	JP		135.8	133.1
581	4507	59734	1.68	H	15	D	TA			115.2	193.6
582	4508	59732	6.57	SH	20	D	BF	WB		88.3	580.3
583	4508	59729	10.35	HS	25	C	TA	BF		119.6	1238.0
584	4509	59727	1.56	SH	20	C	BF	TA		115.8	180.7
585	4509	59725	2.00	HS	15	C	TA	BF		83.3	166.6
586	4509	59722	8.46	HS	25	C	TA	WS		130.3	1102.6
587	4508	59720	2.17	H	15	D	TA			115.2	250.0
588	4511	59729	0.86	H	10	A	TA			62.8	54.0
589	4512	59722	6.71	S	15	D	BS			127.6	856.3
590	4511	59725	1.33	SH	5	C	BS	WB		54.6	72.7
591	4511	59723	3.41	SH	10	C	BS	WB		96.0	327.3
592	4509	59724	1.56	SH	10	C	BF	TA		92.5	144.3
593	4512	59721	2.53	SH	20	C	TA	JP	WS	108.6	274.8
594	4512	59719	4.38	HS	20	D	TA	WS		132.1	578.4
595	4514	59720	0.99	S	15	D	BS			127.6	126.3
597	4514	59726	2.12	S	5	C	BS			80.6	170.9
598	4516	59731	2.84	H	20	C	TA			115.8	329.0
599	4516	59728	2.11	S	15	C	WS			114.9	242.5
600	4516	59727	2.81	H	15	C	TA			83.3	234.1
602	4515	59728	2.14	SH	15	B	BS	TA		88.9	190.2
603	4518	59728	0.17	H	10	D	WB			69.6	11.8
604	4519	59738	0.89	H	10	C	TA			92.5	82.4
605	4519	59738	1.93	SH	15	B	BS	TA		88.9	171.5
606	4520	59736	2.48	S	15	D	BS			127.6	316.5
607	4519	59734	4.26	HS	20	C	TA	WS		121.7	518.5
608	4518	59733	1.19	H	15	C	TA			83.3	99.1
609	4519	59731	6.18	SH	15	D	JP	BS	TA	121.5	750.9
610	4521	59723	0.77	H	15	D	TA			115.2	88.7
611	4521	59723	1.12	S	20	C	WS			121.2	135.7
612	4521	59721	3.69	S	15	D	BS			127.6	470.9
613	4522	59719	7.32	HS	20	C	TA	WS		121.7	891.0
614	4524	59718	7.07	S	10	D	BS			109.5	773.9
615	4525	59719	3.69	S	20	C	BS			103.3	381.0
616	4524	59723	5.99	S	25	C	WS			122.7	734.9
617	4522	59725	3.09	S	25	A	WS			88.9	274.6
618	4571	59747	1.13	S	20	C	WS			121.2	136.9
619	4524	59726	3.22	S	15	D	JP	BS		121.5	391.2
620	4525	59724	9.35	S	15	C	BS	TL		71.9	672.1
621	4527	59224	2.36	S	15	C	BS	TL		71.9	169.7
622	4523	59728	4.76	S	15	D	JP	BS		121.5	578.3
623	4524	59730	16.16	S	10	D	BS			109.5	1768.9
624	4522	59735	2.25	S	10	B	BS			63.3	142.3
625	4523	59735	2.37	SH	10	D	BS	TA		130.9	310.3
626	4524	59736	1.95	S	5	D	BS			103.8	202.4
627	4525	59735	0.64	HS	15	D	TA	WS		157.7	100.9
628	4525	59733	4.93	S	10	D	BS			109.5	539.7
629	4527	59731	22.20	S	10	D	BS			109.5	2430.1
630	4527	59733	2.56	S	5	D	BS			103.8	265.7
631	4526	59731	5.85	S	5	C	BS			80.6	471.5

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
632	4526	59729	1.92	S	15	B	BS			83.3	159.9
633	4527	59728	1.37	S	10	B	TL			46.0	63.0
634	4529	59719	11.64	S	10	C	TL			62.1	722.3
635	4532	59720	14.78	S	5	D	TL			56.1	828.7
636	4531	59723	4.04	S	10	B	TL	BS		46.0	185.8
637	4533	59719	2.56	S	5	B	BS			54.3	139.0
638	4535	59719	18.54	S	10	C	BS			96.0	1779.6
639	4528	59729	7.20	S	10	C	BS			96.0	691.1
640	4532	59728	5.37	S	5	D	BS			103.8	557.3
641	4536	59725	8.77	S	5	C	BS			80.6	706.8
642	4538	59739	1.07	S	5	C	BS			80.6	86.2
643	4540	59739	2.42	S	10	C	JP	BS		106.1	256.7
644	4539	59730	1.56	S	10	C	BS			96.0	149.7
645	4539	59733	8.89	S	5	C	BS			80.6	716.5
646	4540	59738	13.83	S	10	C	BS			96.0	1327.5
647	4542	59738	0.43	S	10	B	JP			47.0	20.2
648	4544	59738	6.44	S	10	C	JP	BS		106.1	683.2
649	4545	59738	3.41	S	10	B	JP	BS		96.5	329.0
650	4568	59761	0.24	S	10	D	JP			81.2	19.5
653	4543	59733	5.74	S	10	C	JP	BS		106.1	609.0
655	4542	59728	7.28	S	10	C	JP			63.7	463.7
656	4537	59727	3.95	S	5	C	TL	BS		54.6	215.7
657	4539	59726	4.29	S	15	C	BS	TL		71.9	308.4
658	4539	59721	1.48	S	5	C	BS			80.6	119.3
659	4537	59721	3.10	S	5	B	BS			54.3	168.3
660	4540	59721	5.64	S	10	C	BS			96.0	541.4
662	4544	59720	4.49	S	5	D	JP	BS		115.5	518.8
663	4544	59727	1.27	H	10	B	WB			47.2	60.0
664	4543	59716	44.80	S	10	D	JP			81.2	3636.2
665	4546	59716	3.10	S	5	C	JP	BS		92.1	285.5
666	4547	59727	1.37	SH	10	C	JP	WB		92.1	126.2
668	4554	59711	49.36	S	10	D	JP			81.2	4006.3
669	4552	59723	1.92	S	5	B	JP	BS		71.7	137.7
670	4552	59723	1.08	S	10	C	BS			96.0	103.7
671	4554	59723	2.29	S	5	C	JP			43.3	99.1
673	4555	59721	0.91	S	5	C	BS	TL		54.6	49.7
674	4554	59721	0.24	S	10	D	JP			81.2	19.5
675	4554	59729	0.85	S	10	D	JP			81.2	69.0
676	4554	59733	0.09	S	10	D	JP			81.2	7.3
677	4552	59735	3.74	S	10	D	JP	BS		118.8	444.4
678	4552	59738	2.17	S	10	C	JP	BS		106.1	230.2
679	4555	59734	0.89	S	5	C	BS			80.6	71.7
680	4558	59740	2.93	S	10	B	JP	BS		96.5	282.7
681	4587	59707	1.08	S	5	C	BS			80.6	87.0
682	4559	59733	2.91	S	5	D	BS	TL		56.1	163.2
683	4557	59733	0.82	S	5	C	BS			80.6	66.1
684	4559	59731	1.26	S	20	C	JP	BS		115.6	145.6
685	4560	59730	1.09	S	5	C	BS			80.6	87.8
686	4560	59730	4.43	H	10	C	TA	WB		92.5	409.9
687	4561	59729	2.73	S	5	D	BS	TL		56.1	153.1
688	4560	59728	0.62	S	10	B	BS			63.3	39.2
689	4561	59727	4.70	H	15	D	TA			115.2	541.5
690	4559	59727	0.78	H	15	C	TA			83.3	65.0
691	4560	59725	2.25	S	15	D	BS			127.6	287.2
692	4559	59721	3.97	H	15	D	TA			115.2	457.4
693	4561	59719	2.98	S	5	C	TL	BS		54.6	162.8
694	4562	59720	1.39	HS	10	C	TA	BS		96.9	134.7
695	4567	59720	1.34	H	5	D	TA			92.3	123.6
695	4514	59723	1.91	S	15	C	BS			98.2	187.5
696	4565	59719	14.05	S	15	D	WS	BS		140.0	1966.3
697	4568	59730	1.79	HS	15	D	TA	WS		157.7	282.3
698	4560	59722	2.86	H	10	C	TA	WB		92.5	264.6
699	4562	59723	3.91	S	5	D	TL	BS		56.1	219.2
700	4562	59724	1.35	HS	10	B	TA	BS		53.1	71.7
701	4563	59725	0.68	SH	15	D	BS	TA		118.4	80.5
702	4564	59725	4.98	SH	20	D	JP	WS	TA	125.4	624.7
703	4563	59729	1.87	HS	20	C	TA	WS		121.7	227.6
705	4563	59731	2.30	SH	15	C	WS	TA		106.2	244.2
706	4564	59727	4.48	HS	10	C	TA	WB	WS	92.5	414.5
707	4566	59731	5.14	S	10	C	JP			63.7	327.4
707	4566	59731	1.92	S	10	D	JP			81.2	155.8
708	4567	59735	6.76	S	15	C	JP			85.3	576.7
711	4568	59732	1.03	SH	10	C	TA	BS		96.9	99.8
712	4565	59728	14.88	SH	15	D	JP	BS	TA	121.5	1807.9
713	4563	59722	6.86	H	15	D	TA			115.2	790.3

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
714	4569	59728	11.55	H	20	D	TA			126.0	1455.6
715	4514	59723	15.36	S	5	B	JP	BS		71.7	1101.5
716	4564	59729	2.55	S	10	C	JP	BS		106.1	270.5
717	4567	59723	0.96	S	15	C	TA			83.3	80.0
718	4565	59723	0.82	S	15	D	BS			127.6	104.7
719	4566	59722	0.91	H	20	D	TA			126.0	114.7
720	4565	59724	1.50	SH	5	D	BS	TA		110.5	165.8
721	4565	59721	4.43	HS	5	D	TA	WB	BS	92.6	410.1
722	4566	59719	1.10	H	20	D	TA			126.0	138.6
723	4570	59714	16.85	H	15	D	TA			115.2	1941.3
724	4570	59720	1.21	S	10	C	JP	BS		106.1	128.4
725	4570	59718	8.05	S	5	C	JP	BS		92.1	741.4
726	4571	59721	7.82	HS	10	B	TA	BS	WB	53.1	415.2
727	4569	59724	2.59	SH	10	D	JP	TA		87.1	225.6
728	4569	59727	0.55	S	15	D	JP			99.2	54.6
729	4572	59726	2.44	SH	15	C	JP			85.3	208.1
730	4572	59724	6.88	S	15	D	JP			99.2	682.7
731	4572	59720	9.77	S	15	C	JP	BS		107.2	1046.9
732	4574	59715	99.04	S	15	D	JP			99.2	9827.1
733	4574	59722	9.69	SH	15	B	JP	WB	TA	98.2	951.7
734	4575	59725	13.72	S	15	D	JP			99.2	1361.4
735	4575	59726	1.01	H	10	C	TA			92.5	93.5
736	4572	59726	10.12	SH	10	B	JP	WB	TA	82.4	833.8
737	4574	59726	0.32	S	15	D	JP			99.2	31.8
738	4573	59727	0.14	S	15	D	JP			99.2	13.9
741	4573	59728	1.44	S	15	D	JP			99.2	142.9
742	4572	59729	1.51	SH	15	B	JP	TA		53.2	80.4
745	4570	59737	1.23	S	5	D	BS			103.8	127.6
746	4574	59737	3.61	SH	15	D	TA	JP		135.8	490.3
747	4578	59736	1.02	H	10	B	WB			47.2	48.2
748	4575	59733	2.99	SH	15	C	JP	TA		81.0	242.1
749	4576	59732	4.89	S	15	C	JP			85.3	417.1
750	4578	59736	0.74	H	10	B	WB			47.2	35.0
751	4595	59736	3.04	S	15	D	JP			99.2	301.6
752	4577	59732	3.68	H	10	B	WB	TA		71.7	264.0
753	4575	59731	0.87	H	10	B	TA			71.7	62.4
755	4579	59722	5.30	H	10	B	TA	WB		71.7	380.2
756	4584	59718	4.30	SH	10	B	JP	BS	WB	96.5	414.8
757	4585	59718	1.81	HS	10	B	JP	WB	BS	82.4	149.1
758	4585	59718	3.28	S	5	B	JP	BS		71.7	235.2
759	4585	59722	3.48	SH	10	B	JP	BS	WB	96.5	335.7
760	4588	59719	1.31	S	5	C	BS			80.6	105.6
761	4587	59722	34.44	S	15	D	JP			99.2	3417.3
762	4587	59722	0.98	S	10	D	JP			81.2	79.5
762	4587	59722	2.44	S	10	C	JP	BS		106.1	258.9
762	4598	59721	1.69	SH	10	C	TA	JP	BS	66.5	112.3
763	4583	59724	3.18	S	10	C	JP	BS		106.1	337.4
764	4590	59725	3.66	H	10	C	WB	TA		92.5	338.7
765	4593	59722	4.88	SH	15	C	JP	BS	TA	107.2	522.9
766	4580	59727	2.25	S	10	D	BS			109.5	246.3
768	4580	59727	3.62	S	15	B	BS			83.3	301.6
770	4583	59731	1.19	S	5	B	JP	BS		71.7	85.3
771	4582	59730	0.90	H	10	C	TA	WB		92.5	83.3
772	4535	59735	12.46	SH	15	C	TA	JP		93.6	1166.2
773	4582	59738	6.73	S	15	C	JP	BS		107.2	721.2
774	4585	59734	2.17	HS	15	C	JP	TA		81.0	175.7
775	4585	59730	26.89	S	15	D	JP			99.2	2668.1
776	4586	59732	3.44	HS	10	B	JP	TA		64.8	222.7
777	4587	59733	1.07	H	15	C	TA			83.3	89.1
778	4589	59732	2.71	S	15	B	JP			65.0	176.2
779	4589	59731	0.48	H	10	B	TA			71.7	34.4
780	4590	59733	1.59	S	10	B	JP	BS		96.5	153.4
781	4595	59735	3.17	SH	10	C	JP	BS	TA	106.1	336.3
782	4598	59736	1.03	S	10	C	JP			63.7	65.6
783	4598	59734	6.68	S	10	C	BS			96.0	641.2
784	4598	59728	8.11	S	10	B	BS			63.3	513.0
785	4595	59733	0.81	HS	10	C	TA	BS		96.9	78.5
786	4594	59730	1.99	HS	10	B	TA	JP		62.0	123.4
787	4595	59726	1.29	S	10	D	JP			81.2	104.7
788	4596	59725	1.45	H	10	B	WB			47.2	68.5
789	4597	59723	4.28	S	15	D	JP			99.2	424.7
790	4598	59725	0.71	S	10	B	JP			47.0	33.4
791	4599	59727	0.80	S	5	D	BS	TL		56.1	44.9
793	4597	59720	6.54	S	10	B	BS			63.3	413.7
795	4593	59719	3.91	S	15	C	JP			85.3	333.5

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
796	4596	59720	2.76	S	15	D	JP			99.2	273.9
797	4595	59718	0.44	S	10	D	JP			81.2	35.7
798	4595	59722	0.17	S	10	D	JP			81.2	13.8
799	4595	59722	0.10	S	10	B	BS			63.3	6.3
799	4599	59720	2.15	SH	10	B	WB	BS		47.2	101.6
800	4509	59717	5.29	HS	25	B	TA	WS		108.3	572.8
801	4509	59714	1.37	SH	20	B	WS	TA		85.9	117.7
802	4511	59704	17.87	HS	20	D	TA	BF		126.0	2252.1
803	4511	59713	2.12	HS	25	C	TA	BF		119.6	253.6
804	4511	59736	4.26	HS	10	C	BS	TA	WB	107.6	458.5
804	4511	59736	2.81	SH	20	D	BF	TA		126.0	354.1
805	4510	59707	1.50	S	15	B	BS	WS		83.3	125.0
806	4511	59708	4.13	S	20	C	BF	WS		63.9	264.1
807	4512	59709	9.46	SH	15	D	BF	TA		115.2	1089.9
808	4513	59704	9.24	S	15	D	BS			127.6	1179.2
809	4510	59703	1.64	HS	20	D	TA	WS		132.1	216.6
810	4509	59703	2.02	S	20	C	WS			121.2	244.7
811	4508	59700	0.18	S	10	C	JP		BS	63.7	11.5
812	4511	59700	12.21	S	10	D	BS			109.5	1336.6
813	4512	59717	8.52	S	20	C	BF	WS		63.9	544.8
814	4514	59717	2.75	SH	20	B	WS	TA		85.9	236.2
815	4515	59717	0.90	H	15	C	TA			83.3	75.0
816	4513	59714	1.93	SH	20	C	WS	TA		113.3	218.7
817	4513	59715	0.53	S	15	C	BS			98.2	52.0
818	4515	59715	0.68	H	15	C	TA			83.3	56.6
819	4516	59713	0.70	H	15	B	TA			75.7	53.0
820	4516	59713	1.22	S	15	D	BS			127.6	155.7
821	4515	59713	2.23	S	20	C	WS			121.2	270.2
822	4515	59713	6.01	HS	20	C	TA	BF		115.8	696.2
823	4514	59710	4.11	S	20	C	WS			121.2	498.0
824	4516	59707	6.14	S	15	B	BS			83.3	511.5
826	4514	59700	17.36	S	10	D	BS			109.5	1900.3
827	4516	59703	5.82	S	15	C	BS			98.2	571.3
828	4519	59706	0.94	S	5	C	TL			54.6	51.3
829	4519	59706	1.28	S	10	C	TL			62.1	79.4
830	4517	59700	0.59	S	10	C	BS			96.0	56.6
832	4518	59701	3.63	S	10	C	BS			96.0	348.4
833	4519	59700	0.12	S	10	C	BS			96.0	11.5
834	4518	59700	1.59	S	20	B	BS	WS		88.5	140.7
835	4520	59700	2.88	S	10	D	BS			109.5	315.3
836	4521	59700	3.31	S	15	B	WS			97.8	323.6
837	4518	59700	0.66	S	5	D	BS			103.8	68.5
837	4518	59700	3.51	S	20	C	WS			121.2	425.3
838	4520	59703	1.71	S	15	C	WS			114.9	196.5
839	4520	59705	0.43	S	15	B	BS			83.3	35.8
840	4521	59705	3.66	S	20	A	BS			61.0	223.1
841	4528	59700	9.65	S	10	D	BS			109.5	1056.3
842	4521	59706	1.50	S	10	B	BS			63.3	94.9
843	4522	59706	5.05	S	15	D	BS			127.6	644.5
844	4525	59706	0.90	S	10	C	BS			96.0	86.4
845	4523	59705	2.69	S	10	B	BS			63.3	170.2
846	4524	59710	4.90	S	15	C	BS			98.2	481.0
847	4522	59713	3.98	S	10	D	BS			109.5	435.7
848	4532	59701	13.86	S	15	D	BS			127.6	1768.9
848	4523	59714	1.00	S	5	B	BS			54.3	54.3
849	4525	59716	0.63	S	10	C	TL			62.1	39.1
850	4526	59713	1.64	S	10	C	TL			62.1	101.8
851	4521	59715	3.30	HS	20	B	TA	WS		82.2	271.2
852	4521	59718	2.26	H	15	C	TA			83.3	188.3
853	4529	59702	14.37	S	5	C	TL			54.6	784.9
854	4531	59703	10.07	S	10	C	TL			62.1	624.9
855	4530	59710	1.88	S	10	C	TL			62.1	116.7
856	4531	59708	10.47	S	5	C	TL			54.6	571.9
857	4538	59717	3.02	S	10	B	BS	TL		46.0	138.9
858	4536	59717	2.05	S	5	B	BS			54.3	111.3
859	4534	59714	0.96	S	10	B	BS			63.3	60.7
860	4534	59713	2.03	S	10	B	BS			63.3	128.4
861	4535	59702	4.00	S	10	C	TL	BS		62.1	248.2
862	4538	59710	0.86	S	10	D	BS			109.5	94.1
863	4536	59700	0.37	S	5	B	BS			54.3	20.1
864	4537	59701	5.59	S	10	C	BS			96.0	536.6
865	4539	59703	13.67	S	10	B	BS			63.3	864.7
866	4537	59707	1.09	S	10	C	BS			96.0	104.6
867	4535	59708	10.93	S	5	B	BS			54.3	593.4
868	4537	59710	1.97	S	10	C	BS			96.0	189.1

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
870	4542	59700	4.53	S	10	D	BS			109.5	495.9
871	4541	59702	2.88	S	5	C	BS			80.6	232.1
872	4544	59702	15.19	S	10	B	BS			63.3	960.8
873	4540	59705	0.93	S	5	B	BS			54.3	50.5
874	4546	59700	1.90	S	5	C	BS			80.6	153.1
875	4544	59707	2.70	S	10	B	BS			63.3	170.8
876	4545	59705	2.02	S	5	C	BS	TL		54.6	110.3
877	4543	59710	2.73	S	5	D	BS			103.8	283.3
879	4549	59700	1.32	H	10	B	TA			71.7	94.7
880	4555	59703	21.48	S	10	D	JP			81.2	1743.4
881	4556	59702	2.74	SH	10	B	BS	TA		78.6	215.3
882	4555	59701	4.63	S	10	C	JP			63.7	294.9
883	4557	59700	0.08	S	5	B	JP			22.6	1.8
884	4558	59701	0.40	H	10	C	TA			92.5	37.0
885	4557	59709	3.12	S	10	C	JP			63.7	198.7
886	4554	59713	0.41	H	10	C	TA			92.5	37.9
887	4553	59717	0.48	S	5	C	JP			43.3	20.8
888	4559	59717	1.16	H	10	B	TA			71.7	83.2
889	4557	59712	2.44	H	10	D	TA			94.7	231.0
890	4560	59717	2.57	S	10	C	TL			62.1	159.5
891	4563	59717	3.66	S	20	C	JP	WS		115.6	422.9
892	4564	59718	1.96	HS	10	B	TA	BS		53.1	104.1
893	4564	59716	0.77	HS	15	D	TA	WS		157.7	121.4
894	4563	59716	2.29	HS	15	B	TA	WB		75.7	173.4
895	4564	59714	2.61	SH	10	C	JP	TA		74.3	193.8
897	4562	59711	2.20	S	15	D	BS	WS		127.6	280.8
898	4562	59710	3.16	S	5	D	BS			103.8	327.9
898	4562	59710	8.71	S	20	C	WS			121.2	1055.3
899	4561	59714	0.57	S	10	C	TL			62.1	35.4
900	4561	59715	0.92	S	10	C	JP	BS		106.1	97.6
901	4563	59713	1.73	H	10	B	TA	WB		71.7	124.1
902	4564	59708	1.66	HS	20	C	TA	WS		121.7	202.1
903	4562	59707	1.93	SH	5	D	JP	TA	BS	79.4	153.2
904	4562	59709	0.52	S	10	C	TL			62.1	32.3
905	4560	59710	0.60	S	10	B	BS			63.3	38.0
906	4559	59706	4.24	S	10	B	BS			63.3	268.2
907	4563	59708	1.62	S	5	D	BS			103.8	168.1
908	4562	59706	2.38	S	10	D	JP	BS		118.8	282.8
909	4561	59705	1.84	S	5	B	BS	TL		43.7	80.4
910	4562	59706	1.32	HS	10	A	JP	TA		36.7	48.5
911	4563	59700	20.16	S	15	D	JP			99.2	2000.4
912	4561	59703	0.77	S	10	C	BS			96.0	73.9
913	4562	59702	0.87	S	10	D	BS			109.5	95.5
914	4560	59700	2.50	S	10	B	TL			46.0	115.0
915	4562	59700	1.42	S	10	D	JP			81.2	115.3
916	4563	59702	0.65	S	5	B	JP			22.6	14.7
919	4567	59701	1.67	SH	20	B	WS	TA		85.9	143.5
920	4568	59701	0.49	S	5	C	BS			80.6	39.5
921	4568	59701	1.31	S	10	C	JP	BS		106.1	139.0
922	4568	59700	0.63	SH	25	B	WS	TA		80.1	50.4
923	4567	59703	1.94	S	10	C	JP	BS		106.1	205.8
924	4567	59703	0.57	H	10	A	TA			62.8	35.8
925	4567	59705	1.04	HS	20	C	TA	WS		121.7	126.9
926	4568	59706	1.61	S	10	C	JP	BS		106.1	170.8
927	4566	59700	56.57	HS	15	C	TA	JP	WS	93.6	5294.8
928	4566	59709	6.09	SH	25	C	WS	TA		119.6	728.4
929	4568	59713	3.64	SH	25	B	WS	TA		80.1	291.4
929	4568	59713	3.64	SH	25	B	WS	TA		80.1	291.4
930	4567	59716	1.13	S	5	B	BS			54.3	61.3
931	4568	59717	5.82	SH	20	B	WS	TA		85.9	499.9
932	4561	59713	1.56	S	10	C	JP	BS		106.1	165.5
933	4560	59714	0.49	S	5	C	TL			54.6	26.8
934	4559	59712	1.94	S	10	C	BS			96.0	186.2
935	4571	59780	4.82	HS	10	B	TA	WB	BS	71.7	345.8
936	4571	59716	1.71	SH	15	C	WS	TA		106.2	181.5
937	4571	59713	2.49	S	10	B	JP	BS		96.5	240.2
938	4572	59713	0.32	S	10	D	JP			81.2	26.0
939	4573	59714	0.32	S	10	D	JP			81.2	26.0
940	4573	59713	4.62	HS	10	A	TA	WB	BS	62.8	290.3
942	4575	59714	2.43	S	15	C	JP			85.3	270.3
945	4572	59710	1.08	S	10	C	BS			96.0	103.7
946	4569	59710	4.46	SH	10	C	JP	BS	TA	106.1	473.2
947	4570	59708	3.63	S	5	A	JP	BS		20.1	73.1
948	4570	59706	3.61	SH	10	A	JP	BS	TA	46.4	167.5
949	4570	59704	5.20	S	15	D	JP			99.2	516.0

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
950	4570	59704	0.5.	S	10	B	JP			47.0	24.9
951	4570	59701	4.27	SH	10	B	JP	BS	TA	96.5	411.9
952	4570	59700	5.71	S	15	C	JP			85.3	487.1
953	4571	59700	0.17	HS	10	A	JP	TA		36.7	6.2
954	4572	59700	0.73	SH	10	A	JP	TA		36.7	26.8
955	4573	59700	0.10	S	15	C	JP			85.3	8.5
956	4574	59700	0.05	H	10	A	TA			62.8	3.1
958	4571	59702	1.55	SH	10	A	TA	JP		50.9	78.9
959	4571	59703	6.68	S	15	C	JP			85.3	569.8
960	4572	59704	2.79	SH	10	B	JP	TA		64.8	180.7
961	4573	59707	0.53	S	10	C	JP			63.7	33.8
962	4573	59708	0.65	S	10	C	BS			96.0	62.4
963	4575	59707	8.88	SH	10	A	JP	BS	TA	46.4	411.9
964	4577	59709	1.53	S	10	B	JP	BS		96.5	147.6
965	4578	59712	0.75	S	15	B	JP			65.0	48.8
966	4579	59710	8.77	S	15	C	JP			85.3	748.1
967	4575	59702	32.75	S	15	D	JP			99.2	3249.6
968	4574	59703	4.11	S	5	B	JP	BS		71.7	294.7
969	4574	59702	0.40	S	5	C	BS			80.6	32.2
971	4578	59700	1.31	S	10	B	TL			46.0	60.3
972	4577	59701	2.64	S	10	C	JP			63.7	168.1
973	4575	59703	2.31	H	10	A	TA			62.8	145.1
975	4581	59713	0.60	S	15	B	BS			83.3	50.0
976	4583	59717	0.63	S	10	B	BS			63.3	39.9
977	4585	59715	0.84	S	5	C	BS			80.6	67.7
978	4586	59712	4.12	S	10	B	JP	BS		96.5	397.5
979	4584	59712	1.64	S	10	A	JP	BS		46.4	76.1
980	4583	59713	2.19	S	15	C	JP			85.3	186.8
981	4581	59710	5.71	SH	10	B	BS	TA		78.6	448.6
982	4581	59712	1.49	S	15	C	JP			85.3	127.1
983	4583	59712	2.39	HS	15	B	TA	JP		83.8	200.3
984	4582	59704	6.38	S	15	C	JP			85.3	544.2
985	4582	59705	0.57	S	10	B	WB			47.2	26.9
986	4582	59706	1.23	S	10	C	BS			96.0	118.1
988	4584	59701	12.09	S	15	D	JP			99.2	1199.6
989	4583	59700	0.18	SH	10	B	JP	TA		64.8	11.7
990	4584	59702	0.97	H	10	B	TA			71.7	69.6
991	4583	59703	0.91	S	10	D	JP			81.2	73.9
992	4584	59706	1.63	S	10	C	BS			96.0	156.5
993	4586	59710	1.22	S	10	B	TA	BS		53.1	64.8
994	4587	59709	2.73	S	10	C	JP	BS		106.1	289.6
995	4588	59712	2.57	S	5	B	JP	BS		71.7	184.3
996	4590	59714	1.81	H	10	C	TA			92.5	167.5
997	4589	59716	0.60	H	15	D	TA			115.2	69.1
998	4589	59709	0.55	S	10	C	BS			96.0	52.8
999	4589	59707	0.35	S	10	C	BS			96.0	33.6
1000	4585	59705	0.48	S	5	B	JP			22.6	10.9
1001	4585	59704	0.39	S	5	C	BS			80.6	31.4
1002	4587	59703	3.44	S	5	C	JP			43.3	148.9
1003	4585	59700	0.35	H	10	B	TA			71.7	25.1
1004	4587	59700	2.18	S	10	B	BS			63.3	137.9
1005	4588	59701	1.30	S	5	B	BS			54.3	70.6
1006	4590	59700	2.66	S	5	B	BS			54.3	144.4
1007	4589	59703	0.15	S	10	D	JP			81.2	12.2
1008	4589	59704	0.40	S	10	C	JP			63.7	25.5
1009	4588	59705	0.93	S	10	C	JP			63.7	59.2
1010	4589	59706	0.47	S	5	C	JP	BS		92.1	43.3
1011	4591	59707	1.15	S	15	D	JP			99.2	114.1
1012	4591	59711	1.88	S	5	B	BS			54.3	102.1
1013	4592	59728	5.19	HS	10	B	BS	JP	TA	96.5	500.7
1014	4593	59714	2.24	S	15	C	JP			85.3	191.1
1015	4593	59715	0.64	S	10	D	JP			81.2	51.9
1016	4591	59717	2.10	H	10	B	WB			47.2	99.2
1017	4594	59716	1.63	S	5	B	JP			22.6	36.9
1018	4597	59717	4.62	S	10	B	BS			63.3	292.2
1019	4595	59714	0.12	S	10	C	JP			63.7	7.6
1020	4596	59713	0.16	S	10	C	JP			63.7	10.2
1021	4596	59711	0.21	S	10	C	JP			63.7	13.4
1022	4596	59712	0.70	S	10	C	JP			63.7	44.6
1023	4594	59712	2.13	S	15	C	JP			85.3	181.7
1024	4593	59712	1.26	S	10	D	JP			81.2	102.3
1025	4594	59710	4.98	S	10	D	JP			81.2	404.2
1026	4593	59708	9.80	HS	10	C	JP	TA		74.3	727.7
1027	4594	59708	3.44	S	10	D	JP			81.2	279.2
1028	4591	59702	16.27	S	10	D	JP			81.2	1320.6

POLYGON ID	CENTROID UTM Zone 13		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
1029	4592	59700	2.93	S	10	C	JP			63.7	186.6
1030	4596	59701	1.13	S	10	B	BS			63.3	71.5
1031	4596	59701	0.84	S	10	D	JP			81.2	68.2
1032	4594	59703	2.12	H	10	B	TA			71.7	152.1
103?	4595	59704	2.38	H	10	B	TA			71.7	170.7
1034	4596	59706	1.00	S	5	C	BS			80.6	80.6
1035	4596	59705	0.58	S	5	C	BS			80.6	46.7
1036	4596	59705	2.81	S	15	C	JP			85.3	239.7
1037	4594	59701	2.56	S	5	B	JP			22.6	57.9
1038	4598	59700	0.28	S	10	D	JP			81.2	22.7
1039	4597	59701	0.32	H	10	B	WB			47.2	15.1
1040	4599	59700	0.30	S	5	B	JP			22.6	6.8
1041	4597	59701	5.66	S	10	D	JP			81.2	459.4
1042	4599	59703	0.61	S	10	B	JP			47.0	28.7
1043	4597	59704	0.45	S	10	C	JP			63.7	28.7
1044	4599	59711	0.36	S	10	C	BS			96.0	34.6
1045	4598	59709	6.32	S	10	C	TL	BS		62.1	392.2
1046	4599	59709	0.72	S	10	C	BS			96.0	69.1
1047	4599	59707	2.29	S	10	C	BS			96.0	219.8
1048	4598	59706	4.48	S	5	C	BS			80.6	361.0
1049	4598	59705	0.27	S	10	C	JP			63.7	17.2
1050	4525	59700	0.38	S	5	D	BS			103.8	39.4
1051	4538	59791	6.59	HS	20	C	TA	WS		121.7	802.1
1052	4549	59782	4.95	SH	25	B	TA	WS		108.3	535.9
1053	4563	59785	1.10	S	15	C	WS			114.9	126.4
1054	4569	59780	7.64	S	10	C	BS			96.0	733.3
1056	4564	59768	8.26	S	25	D	WS	TA		135.1	1116.3
1057	4555	59700	10.76	S	10	D	JP			81.2	873.3
1058	4580	59778	9.45	S	10	D	BS			109.5	1034.4
1058	4580	59778	3.73	S	10	C	BS			96.0	358.0
1059	4530	59709	1.58	S	10	B	TL			46.0	72.7
1061	4541	59719	0.71	S	5	D	BS			103.8	73.7
1062	4553	59729	0.35	S	10	D	JP			81.2	28.4
1063	4537	59785	0.56	H	10	C	TA			92.5	51.8
1064	4527	59782	0.56	H	10	D	TA			94.7	53.0
1067	4576	59768	32.20	S	10	D	BS			109.5	3524.8
1069	4546	59706	59.55	S	10	D	JP			81.2	4833.4
1071	4568	59777	6.02	S	10	C	BS			96.0	577.8

TOTAL FORESTED AREA (km^2) 49.51

TOTAL BIOMASS (t) 471154.1

APPENDIX 3

BIOMASS DATA FOR MANITOBA SAMPLE MAP

APPENDIX 3

BIOMASS DATA FOR MANITOBA SAMPLE MAP (Twp. 25 Rng. 9 E.P.M.)

TABLE LEGEND

POLYGON ID:	Only polygons containing forest cover are listed.	
CENTROID UTM:	UTM reference, to the nearest hectare, of the nominal polygon centroid	
AREA:	of polygons in hectares	
SPECIES ASSOCIATION:	S	Softwood
	SH	Mixed wood (softwood dominant)
	HS	Mixed wood (hardwood dominant)
	H	Hardwood
HEIGHT CLASS: (MATURITY CLASS)	1	0.0 to 3.0 m (restocked)
	2	3.1 to 9.9 m (advanced young growth)
	3	10.0 m and over (immature, over 9 cm diameter at breast height)
	4	Mature stands (rotational age)
	5	Overmature stands (priority for cutting)
DENSITY CLASS:	0	0 to 20% crown closure
	2	21 to 50% crown closure
	3	51 to 70% crown closure
	4	71 to 100% crown closure
COVER SPECIES:	1	Dominant species
	2	Second dominant/codominant species
	3	Understory
	BF	*Abies balsamea* (L.) Mill. (balsam fir)
	BS	*Picea mariana* (Mill.) B.S.P. (black spruce)
	JP	*Pinus banksiana* Lamb. (jack pine)
	TA	*Populus tremuloides* Michx. (trembling aspen)
	TL	*Larix laricina* (Du Roi) Koch (tamarack)
	WS	*Picea glauca* (Moench) Voss (white spruce)
BIOMASS:	Estimated dry weight of standing forest (i.e., with diameter at breast height >0) by hectare and by polygon	

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
1	6946	56649	0.28	S	4	4	JP	WS		77.8	21.8
2	6945	56649	5.08	S	4	4	JP	WS		77.8	395.0
3	6945	56650	2.73	S	3	4	BS			73.9	201.8
4	6876	56716	9.01	S	4	4	JP			89.1	802.6
5	6943	56649	0.18	S	4	4	JP	WS		77.8	14.0
6	6942	56649	0.63	SH	4	4	JP	WS		106.5	67.1
7	6939	56649	8.57	SH	3	4	JP	WS		66.7	571.5
10	6936	56649	50.14	HS	4	4	TA	WS	BF	84.0	4213.7
16	6936	56653	2.03	S	3	3	BS			44.7	90.8
17	6940	56655	12.35	H	4	2	TA			38.8	479.6
18	6940	56653	6.24	HS	4	3	TA	WS	BF	61.3	382.4
19	6941	56655	8.98	S	4	3	JP	WS		44.4	398.7
20	6940	56655	19.83	H	4	3	TA			57.5	1140.3
21	6946	56654	0.95	HS	4	3	TA	WS	BF	61.3	58.2
24	6946	56658	0.44	H	4	4	TA			86.3	38.0
27	6938	56658	10.48	S	3	2	TL			43.5	455.8
30	6933	56659	14.91	H	3	3	TA			55.1	821.2
31	6934	56662	15.95	H	4	4	TA			86.3	1376.8
33	6938	56664	2.56	S	3	3	TL	BS		37.2	95.1
34	6937	56666	19.82	S	3	4	BS	TL		58.4	1157.9
36	6941	56666	1.22	S	4	4	JP			89.1	108.7
38	6943	56665	2.21	S	3	4	BS			71.0	156.8
42	6946	56672	6.61	S	3	4	BS			71.0	469.0
45	6945	56674	1.71	S	3	4	BS			73.9	126.4
46	6947	56673	0.16	HS	4	4	TA	WS	BF	84.0	13.4
47	6945	56675	2.07	S	3	4	JP	WS		53.4	110.6
48	6942	56674	45.08	H	3	4	TA			74.9	3375.8
49	6940	56675	5.07	HS	3	4	TA	WS	BF	71.4	362.1
50	6938	56676	9.99	S	3	4	BS			71.0	708.8
51	6934	56675	2.55	S	3	4	BS			73.9	188.5
52	6935	56671	4.43	S	3	4	BS	JP		74.4	329.8
53	6936	56669	2.49	S	3	4	BS			73.9	184.1
54	6934	56666	5.32	S	4	3	JP	WS		44.4	236.2
55	6939	56678	10.96	S	3	4	JP	WS		53.4	585.6
56	6930	56679	16.12	S	3	3	BS			44.7	721.4
57	6934	56680	4.20	S	3	4	BS			71.0	298.0
60	6945	56683	6.20	SH	3	2	BF	WS		32.7	202.6
61	6946	56681	1.34	S	4	4	JP	WS		77.8	104.2
64	6947	56681	0.02	HS	4	4	TA	WS	BF	84.0	1.7
66	6942	56684	17.06	H	4	4	TA			86.3	1472.6
68	6939	56685	1.68	S	3	4	BS			73.9	124.2
69	6938	56684	5.39	HS	4	4	TA	WS	BF	84.0	453.0
71	6935	56683	12.39	HS	4	4	TA	WS	BF	84.0	1041.2
72	6933	56744	2.20	S	3	3	JP			39.0	85.8
72	6899	56744	1.59	S	3	4	JP			51.1	81.3
73	6939	56689	11.59	S	3	4	TL			79.1	916.3
74	6940	56691	2.77	H	4	4	TA			86.3	239.1
76	6944	56687	3.64	SH	3	3	WS	BF	JP	52.1	189.7
77	6946	56686	0.85	SH	3	3	BS	BF		50.4	42.8
79	6944	56688	2.37	S	3	4	BS			73.9	175.2
80	6946	56688	2.18	S	3	4	BS			71.0	154.7
81	6942	56692	11.91	S	3	4	BS			71.0	845.1
82	6945	56693	44.25	H	4	4	TA			86.3	3819.7
83	6946	56694	2.52	S	4	3	WS	BF	JP	47.3	119.2
85	6946	56697	2.19	SH	4	4	WS	BF	JP	79.7	174.5
86	6947	56697	0.10	H	4	4	TA			86.3	8.6
88	6942	56694	1.96	HS	3	4	TA	WS	BF	71.4	140.0
90	6925	56685	44.48	HS	4	4	TA	WS	BF	84.0	3738.0
91	6929	56690	93.19	S	3	4	TL	BS		68.1	6344.7
92	6935	56703	6.00	SH	3	4	BS	BF		89.9	539.5
94	6945	56702	18.81	S	3	4	WS	BF	JP	62.4	1174.5
95	6946	56701	1.14	H	4	4	TA			86.3	98.4
96	6941	56704	5.95	S	3	4	BS			71.0	422.2
97	6941	56706	16.65	H	4	4	TA			86.3	1437.2
98	6937	56705	15.50	S	3	4	WS	BF	JP	62.4	967.9
99	6933	56707	2.05	S	3	4	BS			73.9	151.5
100	6946	56706	0.31	SH	3	4	WS	BF	JP	71.7	22.2
101	6946	56708	0.44	S	4	3	WS	BF	JP	47.3	20.8
102	6925	56718	293.53	H	4	4	TA			86.3	25337.9
103	6942	56714	9.73	S	3	4	JP	WS		53.4	519.8
104	6939	56715	13.02	S	4	3	WS	BF	JP	47.3	615.7
105	6938	56713	2.63	S	3	4	BF	WS		80.3	211.1
106	6937	56715	5.50	S	3	4	BS			73.9	406.6
107	6940	56722	11.71	S	3	3	JP	WS		33.6	393.0
108	6944	56722	1.94	S	3	4	JP	WS		53.4	103.6

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
109	6945	56721	3.00	SH	4	4	WS			69.9	209.7
110	6945	56719	1.88	SH	3	3	JP	WS		40.7	76.5
111	6946	56717	1.48	S	3	4	WS			74.2	109.8
112	6937	56721	4.68	S	3	4	BS			73.9	345.9
113	6935	56720	4.61	SH	3	3	JP			43.7	201.7
114	6931	56718	3.09	S	4	4	JP			89.1	275.3
115	6931	56721	4.68	SH	4	3	BS			63.5	297.0
117	6934	56710	11.56	SH	3	4	BS	BF		89.9	1039.5
118	6930	56709	71.32	H	4	4	TA			86.3	6156.4
120	6946	56722	0.50	S	4	4	JP	WS		77.8	38.9
121	6946	56723	0.29	S	4	4	JP	WS		77.8	22.6
122	6946	56726	5.10	S	3	4	JP	WS		53.4	272.5
123	6945	56728	16.60	S	4	3	WS	BF	JP	47.3	785.0
124	6935	56724	7.80	S	4	4	JP			89.1	694.8
125	6927	56723	10.54	HS	4	2	TA	WS	BF	37.3	393.6
127	6935	56728	4.24	SH	4	3	BS			63.5	269.1
128	6936	56728	7.45	S	4	4	JP			89.1	663.7
129	6937	56726	4.98	H	4	4	TA			86.3	429.9
130	6938	56733	16.48	S	3	4	BS			73.9	1218.2
132	6946	56730	0.89	H	4	4	TA			86.3	76.8
133	6946	56731	0.49	S	4	4	JP			53.1	26.0
134	6946	56732	0.80	S	4	4	JP			53.1	42.5
135	6946	56734	0.39	H	4	4	TA			86.3	33.7
136	6943	56733	3.96	S	3	4	BS			73.9	292.7
137	6942	56735	7.26	S	4	4	JP			53.1	385.6
138	6939	56734	5.04	S	4	4	JP			89.1	449.0
139	6936	56731	2.65	H	4	4	TA			86.3	228.8
140	6934	56731	6.24	S	3	4	JP			51.1	319.0
141	6931	56730	5.94	S	4	4	JP	WS		77.8	461.9
142	6929	56733	17.09	S	3	4	BS			71.0	1212.6
143	6935	56736	3.43	S	4	4	JP			89.1	305.6
144	6936	56737	8.79	S	4	4	JP			53.1	466.8
145	6944	56736	17.01	S	3	3	JP			30.9	525.4
147	6946	56739	0.29	HS	4	4	TA	JP		75.9	22.0
148	6945	56739	9.07	S	3	4	JP			51.1	463.7
149	6944	56742	15.89	H	4	4	TA			86.3	1371.6
150	6945	56744	8.48	S	3	3	JP			39.0	330.8
151	6945	56744	0.98	H	4	4	TA			86.3	84.6
152	6946	56745	0.13	H	4	4	TA			86.3	11.2
153	6946	56746	0.60	H	4	4	TA			86.3	51.8
154	6946	56746	0.13	S	3	4	JP			51.1	6.6
155	6941	56743	9.10	S	3	3	BS			49.5	450.1
156	6940	56741	2.27	S	3	4	JP			72.7	164.9
157	6932	56738	25.25	S	3	4	JP			51.1	1290.8
158	6933	56743	7.00	SH	3	4	JP	WS		66.7	466.8
159	6941	56745	0.84	H	4	4	TA			86.3	72.5
160	6937	56746	0.83	H	4	4	TA			86.3	71.6
162	6940	56744	3.81	HS	3	2	TA	WS	BF	38.3	145.7
163	6925	56746	0.55	S	3	4	BS			71.0	39.0
164	6923	56746	0.18	HS	3	4	TA	JP		71.7	12.9
165	6918	56746	3.07	S	3	3	TL			39.7	121.8
166	6925	56742	10.98	S	4	4	JP			89.1	978.1
167	6923	56745	3.10	S	3	4	JP			51.1	158.5
168	6920	56744	2.86	S	3	4	JP			51.1	146.2
169	6915	56743	7.20	S	3	2	JP	WS		24.6	177.4
171	6912	56741	43.29	HS	3	4	TA	JP		71.7	3105.0
172	6905	56741	30.25	SH	3	3	JP	WS		45.2	1368.8
173	6907	56745	4.83	S	3	4	JP	WS		53.4	258.1
174	6903	56731	2.82	S	3	4	JP	WS		84.1	237.3
175	6906	56731	4.48	S	4	4	JP	WS		77.8	348.4
176	6906	56721	69.63	SH	3	4	BS	JP		75.7	5274.5
177	6913	56724	136.65	HS	3	4	TA	WS	BF	71.4	9759.6
178	6918	56733	4.67	S	3	3	JP	WS		33.6	156.7
179	6918	56740	14.38	S	4	4	JP	WS		77.8	1118.2
180	6942	56734	119.89	H	4	4	TA			86.3	10349.0
180	6916	56734	24.21	H	4	4	TA			86.3	2089.8
181	6923	56737	2.97	S	4	4	JP			89.1	264.6
182	6928	56738	2.91	S	3	3	JP			30.9	89.9
183	6927	56736	5.08	S	4	4	BS			77.5	393.6
184	6922	56733	7.69	S	3	4	JP	WS		84.1	647.1
186	6924	56730	3.49	SH	3	4	BS	BF		89.9	313.8
188	6924	56729	5.88	S	3	3	BS			44.7	263.1
189	6926	56725	7.72	S	4	4	JP			89.1	687.7
190	6923	56722	2.62	S	3	4	BS			73.9	193.7
191	6920	56721	10.40	SH	4	4	BF	WS		67.3	699.8

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
192	6928	56718	2.99	S	3	3	JP			30.9	92.3
193	6908	56717	25.27	H	4	4	TA			86.3	2181.3
194	6903	56724	13.12	S	3	4	BS	BF	WS	66.9	878.1
195	6911	56728	5.76	S	3	2	BS			35.3	203.4
196	6905	56710	11.46	H	4	4	TA			86.3	989.2
198	6910	56711	6.56	S	3	4	BS			71.0	465.5
199	6918	56713	8.53	SH	3	4	WS	BF	JP	71.7	611.4
201	6922	56711	4.38	H	4	4	TA			86.3	378.1
202	6925	56713	6.12	HS	3	2	TA	JP		27.3	167.2
203	6925	56709	15.14	S	3	4	BS	TL		58.4	884.5
205	6931	56700	33.05	HS	3	4	TA	JP		52.9	1747.2
207	6925	56703	2.58	HS	4	4	TA	WS	BF	84.0	216.8
208	6922	56704	18.55	S	3	3	BS			44.7	830.1
209	6919	56706	31.69	S	3	3	BS			44.7	1418.1
210	6918	56711	2.22	HS	4	4	TA	WS	BF	84.0	186.6
212	6911	56698	75.60	S	3	4	BS			71.0	5364.1
213	6912	56705	6.87	HS	3	4	TA	WS	BF	71.4	490.7
214	6911	56708	8.28	S	4	4	JP			89.1	737.6
215	6909	56708	10.17	H	3	4	TA			74.9	761.6
216	6904	56706	6.32	HS	3	4	TA	WS	BF	71.4	451.4
217	6906	56702	37.02	H	3	3	TA			55.1	2038.9
218	6909	56702	6.21	HS	4	2	TA	WS	BF	37.3	231.9
219	6911	56703	7.18	SH	3	4	BS	BF		89.9	645.7
220	6908	56699	3.19	HS	3	4	TA	WS	BF	71.4	227.8
221	6915	56701	2.64	HS	3	4	TA	WS	BF	71.4	188.6
223	6919	56703	2.01	HS	3	4	TA	WS	BF	71.4	143.6
224	6920	56702	4.88	SH	4	3	BS			63.5	309.7
225	6915	56699	13.34	S	3	4	BS			73.9	986.1
226	6909	56695	11.56	S	3	4	BS	TL		58.4	675.4
228	6907	56695	5.64	SH	3	3	BS			52.8	298.0
230	6903	56696	3.48	SH	3	4	JP			75.4	262.3
231	6903	56699	4.34	H	3	4	TA			74.9	325.0
232	6905	56692	13.01	H	3	3	TA			55.1	716.5
233	6907	56691	10.94	S	3	4	BS			73.9	808.7
234	6909	56690	2.68	S	3	4	BS			71.0	190.2
235	6917	56693	5.29	SH	4	3	BS			63.5	335.7
236	6914	56690	3.98	H	3	4	TA			74.9	298.0
237	6914	56689	53.77	S	3	3	BS			49.5	2659.6
238	6923	56690	4.71	S	3	4	TL	BS		68.1	320.7
239	6926	56689	21.31	S	3	4	BS			73.9	1575.2
240	6929	56692	5.36	S	3	4	BS			71.0	380.3
241	6931	56690	8.76	HS	3	4	TA	WS	BF	71.4	625.6
243	6923	56685	6.70	HS	3	3	TA	JP		59.6	399.1
245	6921	56687	5.28	H	4	4	TA			86.3	455.8
246	6919	56685	3.03	SH	3	4	BS	BF		89.9	272.5
247	6919	56687	11.10	S	3	4	BS			73.9	820.5
248	6916	56688	7.48	SH	4	3	BS			63.5	474.7
249	6916	56686	3.89	H	3	4	TA			74.9	291.3
250	6912	56688	7.43	SH	3	4	WS	BF	JP	71.7	532.5
251	6908	56687	24.20	H	3	4	TA			74.9	1812.2
252	6912	56683	4.33	S	4	4	JP			89.1	385.7
253	6906	56681	40.20	S	4	4	JP			89.1	3581.1
254	6904	56683	6.25	S	4	4	JP			89.1	556.8
256	6905	56689	17.66	S	3	4	JP	WS		53.4	943.5
257	6903	56688	4.01	H	3	4	TA			74.9	300.3
258	6910	56674	39.32	H	4	4	TA			86.3	3394.1
259	6920	56681	12.96	H	4	4	TA			86.3	1118.7
260	6925	56681	30.38	HS	4	4	TA	WS	BF	84.0	2553.1
261	6933	56688	6.67	HS	3	4	TA	WS	BF	71.4	476.4
262	6930	56684	3.11	S	5	3	JP	WS		43.6	135.5
263	6926	56679	6.53	S	3	4	BS			73.9	482.7
264	6920	56664	80.47	S	3	4	BS			71.0	5709.6
265	6927	56678	9.49	HS	4	4	TA	WS	BF	84.0	797.5
266	6925	56675	17.17	S	3	4	BS	BF	WS	74.9	1285.8
267	6929	56673	3.14	S	3	3	BS			49.5	155.3
268	6925	56668	17.72	S	3	4	BS			73.9	1309.8
269	6916	56669	17.87	S	3	4	BS			73.9	1320.9
270	6913	56668	6.61	SH	3	4	BS	BF		89.9	594.4
272	6906	56668	23.60	S	3	4	BS			71.0	1674.5
273	6911	56669	7.97	S	3	4	BS			73.9	589.1
274	6912	56671	2.62	SH	3	4	BS	BF		89.9	235.6
275	6914	56673	6.02	S	3	4	BS			73.9	445.0
276	6915	56675	2.38	H	4	4	TA			86.3	205.4
278	6917	56681	2.07	H	4	4	TA			86.3	178.7
279	6913	56679	11.43	H	3	4	TA			74.9	855.9

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
280	6911	56678	1.73	H	4	4	TA			86.3	149.3
281	6909	56678	4.02	S	3	3	BS	JP		42.5	171.0
283	6905	56675	13.35	H	3	4	TA			74.9	999.7
285	6905	56672	3.45	H	3	3	TA			55.1	190.0
287	6903	56671	7.44	S	3	4	BS			73.9	550.0
289	6910	56681	4.01	HS	3	3	TA	JP		59.6	238.9
290	6901	56678	6.68	HS	3	4	TA	JP		71.7	479.1
291	6905	56677	10.76	H	3	3	TA			55.1	592.6
292	6903	56665	24.39	H	3	2	TA			39.9	972.9
293	6906	56665	10.31	HS	3	3	TA	WS	BF	53.0	546.4
295	6909	56660	48.56	H	4	4	TA			86.3	4191.8
297	6927	56659	42.42	HS	4	4	TA	WS	BF	84.0	3564.9
298	6930	56663	18.81	S	3	4	BS	TL		58.4	1098.9
299	6929	56661	3.83	S	3	3	JP	WS		33.6	128.5
301	6922	56659	3.04	H	3	4	TA			74.9	227.6
302	6920	56662	4.67	H	3	4	TA			74.9	349.7
303	6913	56658	31.33	H	4	4	TA			86.3	2704.4
304	6915	56658	3.38	S	3	3	BS			44.7	151.3
305	6914	56660	1.28	H	4	4	TA			86.3	110.5
307	6900	56660	27.99	H	3	4	TA			74.9	2096.0
308	6907	56661	4.45	S	3	4	BS			73.9	328.9
309	6905	56660	16.15	H	4	4	TA			86.3	1394.1
310	6906	56655	4.02	H	4	4	TA			86.3	347.0
311	6908	56656	4.74	H	3	4	WB			65.2	309.1
312	6910	56651	17.99	SH	3	4	BS	BF		89.9	1617.7
314	6915	56651	13.81	S	3	4	BS			71.0	979.9
315	6912	56655	7.78	HS	3	4	TA	WS	BF	71.4	555.7
316	6916	56650	2.54	SH	3	4	BS	BF		89.9	228.4
317	6920	56650	15.65	HS	4	4	TA	WS	BF	84.0	1315.2
318	6922	56649	7.14	SH	3	4	WS	BF	JP	71.7	511.7
320	6925	56654	8.06	HS	3	4	TA	WS	BF	71.4	575.7
321	6926	56650	6.17	SH	3	4	WS	BF	JP	71.7	442.2
322	6909	56650	3.41	H	4	4	TA			86.3	294.4
324	6907	56652	3.49	H	3	4	TA			74.9	261.3
325	6906	56650	4.56	SH	4	4	WS	BF	JP	79.7	363.3
326	6902	56650	3.98	H	4	4	TA			86.3	343.6
327	6925	56658	5.54	H	3	4	TA			74.9	414.9
328	6919	56655	11.44	H	4	4	TA			86.3	987.5
329	6912	56650	0.40	H	4	4	TA			86.3	34.5
330	6908	56650	0.01	H	3	4	TA			74.9	0.7
331	6904	56650	1.94	H	3	4	TA			74.9	145.3
332	6903	56650	0.26	H	3	4	TA			74.9	19.5
336	6892	56650	1.08	H	3	4	TA			74.9	80.9
337	6889	56650	2.52	H	4	4	TA			86.3	217.5
338	6886	56650	1.99	H	4	4	TA			86.3	171.8
342	6881	56653	13.81	HS	4	3	TA	WS	BF	61.3	846.4
343	6882	56662	1.76	S	3	4	WS	BF	JP	62.4	109.9
344	6881	56664	2.02	H	3	2	TA			39.9	80.6
346	6885	56662	19.34	HS	3	3	TA	WS	BF	53.0	1024.9
348	6886	56665	3.81	H	4	4	TA			86.3	328.9
349	6888	56660	3.71	SH	3	2	WS	BF	JP	39.0	144.8
350	6889	56664	4.62	S	3	4	BS			73.9	341.5
351	6889	56660	4.23	HS	3	4	TA	WS	BF	71.4	302.1
352	6891	56663	34.61	H	3	4	TA			74.9	2591.7
353	6892	56664	2.65	S	4	4	JP			89.1	236.1
354	6893	56664	2.88	S	4	4	JP			53.1	152.9
355	6893	56663	1.76	H	3	4	TA			74.9	131.8
357	6892	56667	2.16	HS	3	4	TA	JP		71.7	154.9
358	6893	56661	1.45	HS	3	4	TA	WS	BF	71.4	103.6
359	6896	56662	11.22	HS	3	3	TA	WS	BF	53.0	594.6
360	6895	56656	21.97	H	4	4	TA			86.3	1896.5
361	6892	56653	5.44	H	3	4	TA			74.9	407.4
363	6893	56650	49.47	H	3	4	TA			74.9	3704.5
365	6898	56663	3.25	S	3	3	BS	JP		42.5	138.3
367	6898	56665	2.66	S	3	4	JP	WS		53.4	142.1
368	6895	56664	3.28	S	3	4	JP	WS		53.4	175.2
370	6893	56666	5.32	S	3	4	BS			73.9	393.2
371	6899	56667	2.46	S	3	3	BS			49.5	121.7
373	6900	56666	3.11	S	3	4	JP	WS		84.1	261.7
374	6902	56668	3.97	S	3	3	JP	WS		47.7	189.4
377	6899	56669	6.37	S	3	3	JP	WS		47.7	303.9
378	6896	56670	21.38	S	4	4	JP			89.1	1904.6
379	6896	56667	6.83	S	3	3	BS			49.5	337.8
380	6894	56671	1.65	HS	3	4	TA	JP		71.7	118.3
381	6891	56671	28.88	HS	4	3	TA	WS	BF	61.3	1770.0

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
383	6884	56670	5.75	S	3	4	BS			73.9	425.0
384	6881	56669	7.61	S	3	4	BS			73.9	562.5
385	6880	56666	29.33	S	3	4	BS			73.9	2168.0
386	6885	56666	4.88	S	3	4	BS			73.9	360.7
387	6879	56668	6.25	H	4	4	TA			86.3	539.5
388	6882	56671	9.88	S	3	2	BS			35.3	348.8
389	6876	56671	14.49	S	3	4	BS			73.9	1071.1
391	6885	56674	8.71	HS	3	4	TA	WS	BF	71.4	622.1
392	6885	56675	2.99	S	3	2	TL	BS		20.3	60.6
393	6891	56677	2.65	SH	3	2	JP			32.7	86.7
394	6893	56677	11.13	SH	3	3	JP			49.6	551.8
395	6894	56672	5.76	HS	4	4	TA	JP		75.9	437.0
396	6896	56677	3.00	HS	3	4	TA	JP		71.7	215.2
397	6895	56674	1.90	SH	3	4	JP			75.4	143.2
398	6897	56673	4.54	HS	3	4	TA	JP		71.7	325.6
400	6898	56675	3.00	HS	3	4	TA	JP		71.7	215.2
401	6901	56672	2.20	S	3	4	JP			51.1	112.5
402	6897	56674	13.80	S	4	4	JP			89.1	1229.3
403	6900	56677	1.80	HS	3	4	TA	JP		71.7	129.1
404	6898	56680	15.27	H	3	4	TA			74.9	1143.5
405	6895	56679	4.97	S	4	4	JP			89.1	442.7
406	6893	56679	10.30	S	4	4	JP			89.1	917.6
407	6887	56678	3.22	H	3	4	TA			74.9	241.1
408	6881	56676	2.15	S	3	4	BS			73.9	158.9
409	6878	56675	22.18	S	3	4	BS			71.0	1573.7
410	6878	56680	2.43	H	3	4	TA			74.9	182.0
412	6880	56684	3.76	H	3	4	TA			74.9	281.6
413	6884	56684	3.39	S	3	4	BS			73.9	250.6
414	6882	56684	11.63	H	4	4	TA			86.3	1003.9
416	6888	56682	9.35	S	4	4	JP			89.1	832.9
417	6894	56682	21.51	H	3	4	TA			74.9	1610.7
418	6894	56684	18.26	S	3	4	JP			51.1	933.5
419	6902	56687	3.18	SH	3	4	JP	WS		86.6	275.2
420	6900	56687	5.75	S	4	4	JP			89.1	512.2
421	6898	56690	6.86	H	3	4	TA			74.9	513.7
422	6900	56690	3.83	H	3	4	TA			74.9	286.8
423	6893	56687	35.80	HS	4	4	TA	WS	BF	84.0	3008.6
424	6895	56691	8.86	H	3	3	TA			55.1	488.0
425	6891	56685	11.50	H	3	4	TA			74.9	861.2
426	6887	56684	17.78	H	4	4	TA			86.3	1534.8
427	6885	56686	1.10	H	3	4	TA			74.9	82.4
428	6886	56686	9.31	H	3	3	TA			55.1	512.7
429	6886	56688	3.36	S	3	4	BS			73.9	248.4
430	6879	56686	30.51	S	3	4	BS			71.0	2164.8
432	6882	56693	6.37	S	3	4	BS			73.9	470.9
435	6889	56695	49.80	S	3	3	BS			44.7	2228.5
438	6899	56694	11.53	H	4	4	TA			86.3	995.3
439	6900	56694	4.01	H	4	4	TA			86.3	346.1
440	6902	56693	5.21	H	3	3	TA			55.1	286.9
441	6897	56696	5.69	H	4	4	TA			86.3	491.2
442	6894	56696	7.21	HS	3	4	TA	WS	BF	71.4	514.9
443	6885	56698	10.33	S	3	4	BS	TL		58.4	603.5
444	6886	56695	1.43	S	3	4	BS			73.9	105.7
445	6883	56699	4.55	S	3	4	BS			71.0	322.8
446	6881	56698	7.87	SH	3	2	BF	WS		32.7	257.1
448	6888	56699	35.	HS	4	4	TA	WS	BF	84.0	3001.0
449	6889	56702	13.38	SH	4	4	BF	WS		67.3	900.4
450	6893	56699	25.94	HS	4	4	TA	WS	BF	84.0	2179.9
452	6900	56700	29.97	S	3	4	BS			71.0	2126.5
454	6899	56697	8.44	H	4	4	TA			86.3	728.6
456	6902	56699	2.14	HS	3	4	TA	WS	BF	71.4	152.8
457	6903	56703	4.39	S	3	3	JP	WS		33.6	147.3
458	6898	56705	66.39	HS	4	4	TA	WS	BF	84.0	5579.3
459	6895	56703	5.21	H	4	4	TA			86.3	449.7
460	6889	56705	15.02	S	3	4	WS	BF	JP	62.4	937.9
462	6882	56704	13.98	SH	3	4	WS	BF	JP	71.7	1002.0
464	6879	56702	3.28	S	3	4	BS			71.0	232.7
465	6877	56702	13.94	HS	4	4	TA	WS	BF	84.0	1171.5
467	6888	56709	7.75	S	3	2	TL			24.3	188.4
468	6894	56710	4.66	SH	4	4	BF	WS		67.3	313.6
469	6895	56708	4.26	SH	4	4	BF	WS		67.3	286.7
470	6898	56708	10.63	S	4	4	BS	JP		77.8	827.3
471	6902	56707	5.10	S	4	4	JP			89.1	454.3
472	6875	56706	14.28	S	3	4	BS			73.9	1055.6
473	6882	56710	1.85	HS	3	4	TA	WS	BF	71.4	132.1

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
474	6883	56711	5.78	S	4	4	JP	WS		77.8	449.5
475	6879	56712	4.94	S	4	4	JP			89.1	440.1
476	6883	56715	7.64	SH	3	2	BF			35.7	273.0
477	6887	56712	7.40	HS	4	2	TA	WS	BF	37.3	276.3
479	6892	56715	5.31	S	3	4	TL			68.7	364.6
480	6893	56714	2.86	SH	3	3	BS	TL		49.3	140.9
481	6893	56712	21.46	S	3	3	TL			39.7	851.7
482	6889	56711	5.97	S	3	4	TL			79.1	472.0
483	6902	56714	2.57	S	3	4	BS			71.0	182.3
484	6899	56718	7.63	H	4	4	TA			86.3	658.6
485	6895	56718	25.93	SH	3	3	BS	BF		50.4	1306.6
486	6897	56719	4.78	HS	3	4	TA	WS	BF	71.4	341.4
487	6891	56717	5.97	HS	3	4	TA	WS	BF	71.4	426.4
488	6891	56716	2.40	HS	3	4	TA	WS	BF	71.4	171.4
489	6889	56718	65.18	SH	4	4	BF	WS		67.3	4386.1
490	6887	56719	4.52	H	4	2	TA			38.8	175.5
491	6851	56700	484.99	H	4	4	TA			86.3	41864.9
492	6878	56714	2.57	S	4	4	BS			77.5	199.1
493	6880	56725	7.42	SH	3	2	WS	BF	JP	39.0	289.5
494	6885	56723	12.05	HS	3	4	TA	WS	BF	71.4	860.6
495	6889	56726	16.55	S	3	4	BF	WS		80.3	1328.7
496	6891	56724	4.83	HS	3	4	TA	WS	BF	71.4	345.0
497	6896	56723	19.06	HS	4	2	TA	WS	BF	37.3	711.8
499	6902	56720	11.49	HS	3	2	TA	JP		25.0	287.0
501	6900	56726	5.54	SH	4	4	BF	WS		67.3	372.8
502	6902	56728	5.91	S	3	4	WS	BF	JP	62.4	369.0
504	6898	56727	6.95	SH	3	3	BF	WS		54.0	375.4
505	6897	56729	3.78	H	3	4	TA			74.9	283.1
507	6894	56729	12.74	HS	4	2	TA	WS	BF	37.3	475.7
509	6887	56728	7.18	HS	3	4	TA	WS	BF	71.4	512.8
510	6885	56728	4.33	SH	3	2	BF			35.7	154.7
511	6882	56729	49.02	HS	4	2	TA	WS	BF	37.3	1830.6
512	6882	56732	8.24	H	4	4	TA			86.3	711.3
513	6885	56732	8.26	S	3	3	BS	BF	WS	48.9	403.8
514	6894	56732	9.46	S	3	4	BF	WS		80.3	759.5
515	6896	56733	20.88	HS	4	3	TA	JP		60.0	1252.4
516	6899	56732	3.42	H	4	3	TA			57.5	196.7
518	6895	56736	4.97	S	3	3	WS	BF	JP	50.1	248.9
519	6892	56737	2.39	HS	3	4	TA	WS	BF	71.4	170.7
520	6890	56734	5.38	HS	4	2	TA	WS	BF	37.3	200.9
521	6890	56733	4.01	HS	3	3	TA	WS	BF	53.0	212.5
522	6886	56737	3.61	HS	3	3	TA	WS	BF	53.0	191.3
523	6884	56737	4.31	S	4	3	JP	WS		44.4	191.4
524	6883	56739	6.81	H	4	3	TA			57.5	391.6
525	6885	56740	21.14	HS	4	3	TA	WS	BF	61.3	1295.7
526	6888	56737	2.68	S	3	4	JP			51.1	137.0
527	6887	56736	26.85	HS	3	4	TA	WS	BF	71.4	1917.6
529	6897	56739	2.15	HS	3	4	TA	WS	BF	71.4	153.6
530	6897	56741	1.58	HS	3	4	TA	WS	BF	71.4	112.8
531	6886	56742	3.10	H	4	3	TA			57.5	178.3
532	6885	56744	8.99	H	4	4	TA			86.3	776.0
533	6884	56745	7.61	HS	3	4	TA	JP		71.7	545.8
534	6880	56745	2.06	HS	3	3	TA	WS	BF	53.0	109.2
535	6881	56746	0.64	HS	4	4	TA	WS	BF	84.0	53.8
536	6879	56746	2.73	S	3	3	JP			39.0	106.5
538	6879	56743	7.12	HS	3	4	TA	WS	BF	71.4	508.5
540	6866	56742	53.02	HS	4	4	TA	WS	BF	84.0	4455.7
541	6873	56746	0.14	S	4	4	JP			89.1	12.5
542	6871	56746	0.76	H	3	4	TA			74.9	56.9
543	6870	56745	6.55	SH	3	2	BF	WS		32.7	214.0
544	6866	56743	3.12	S	3	4	BS			73.9	230.6
545	6861	56745	5.11	S	3	4	BS	JP		74.4	380.4
546	6854	56732	153.44	HS	4	4	TA	WS	BF	84.0	12894.8
547	6853	56745	9.90	HS	4	4	TA	WS	BF	84.0	832.0
548	6857	56741	4.94	SH	4	3	BS	BF		66.0	326.0
549	6855	56738	5.57	H	4	3	TA			57.5	320.3
550	6861	56741	5.02	HS	4	4	TA	JP		75.9	380.9
551	6864	56741	3.01	S	4	4	JP			89.1	268.1
552	6865	56740	0.98	S	4	4	JP			89.1	87.3
553	6866	56739	3.30	H	3	4	TA			74.9	247.1
554	6870	56741	3.91	SH	4	3	BS			63.5	248.2
555	6872	56734	86.08	S	3	4	BS	TL		58.4	5029.0
557	6877	56735	4.27	S	3	4	BS			73.9	315.6
558	6873	56732	6.51	S	3	4	BS			73.9	481.2
559	6867	56729	23.21	S	4	4	JP			89.1	2067.6

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
560	6868	56733	2.38	SH	3	4	BS	BF		89.9	214.0
561	6866	56734	3.32	H	4	4	TA			86.3	286.6
562	6867	56731	2.92	H	3	4	TA			74.9	218.7
563	6866	56731	3.28	S	3	4	BS	JP		74.4	244.2
564	6864	56728	30.34	S	4	4	JP			89.1	2702.8
565	6861	56730	6.45	S	4	4	JP			89.1	574.6
566	6861	56735	4.26	HS	3	3	TA	WS	BF	53.0	225.8
567	6859	56735	1.42	S	3	2	TL			43.5	61.8
568	6857	56736	5.40	HS	3	4	TA	JP		52.9	285.5
569	6857	56729	9.74	S	3	4	BS			71.0	691.1
570	6858	56730	1.73	S	3	4	BS			73.9	127.9
571	6853	56728	1.81	SH	4	4	JP	WS		106.5	192.8
572	6852	56723	9.57	S	4	4	BS	JP		77.8	744.8
572	6858	56723	10.90	S	4	4	BS	JP		77.8	848.3
574	6860	56725	7.80	S	3	4	BS			71.0	553.4
575	6866	56726	4.96	HS	3	4	TA	WS	BF	71.4	354.2
576	6866	56725	3.11	S	3	4	BS			71.0	220.7
577	6867	56723	3.76	HS	3	4	TA	JP		71.7	269.7
578	6869	56727	4.11	HS	3	4	TA	JP		71.7	294.8
579	6874	56726	20.59	S	4	4	JP			89.1	1834.2
580	6875	56725	3.07	S	3	4	BS			73.9	226.9
581	6873	56722	3.86	SH	4	4	WS			69.9	269.8
582	6877	56729	4.70	S	3	4	BS			73.9	347.4
583	6852	56725	28.45	S	3	4	JP	WS		53.4	1520.0
584	6855	56718	21.42	H	4	2	TA			38.8	831.8
585	6862	56717	17.69	S	3	3	JP	WS		33.6	593.6
588	6875	56720	4.00	S	3	4	TL	BS		73.5	294.0
589	6874	56719	4.93	H	3	4	TA			74.9	369.2
590	6874	56717	2.40	S	3	4	BS			73.9	177.4
591	6877	56717	2.64	S	3	4	BS			73.9	195.1
593	6874	56710	18.22	SH	4	4	BF	WS		67.3	1226.1
594	6870	56710	4.90	S	4	4	JP			89.1	436.5
595	6868	56710	1.99	S	4	4	JP			89.1	177.3
596	6870	56713	3.70	H	4	4	TA			86.3	319.4
597	6868	56713	3.12	H	3	4	TA			74.9	233.6
599	6865	56714	3.32	HS	3	4	TA	WS	BF	71.4	237.1
600	6868	56716	2.42	S	3	4	BS	TL		58.4	141.4
601	6868	56708	28.00	HS	3	4	TA	JP		71.7	2008.3
602	6870	56706	8.12	HS	3	4	TA	WS	BF	71.4	579.9
603	6874	56708	4.34	H	4	4	TA			86.3	374.6
604	6878	56708	2.02	S	3	4	BS			73.9	149.3
606	6864	56705	8.62	SH	3	4	BS	BF		89.9	775.1
607	6866	56705	2.60	HS	3	3	TA	WS	BF	53.0	137.8
609	6875	56702	3.30	S	3	3	BS			44.7	147.7
612	6863	56696	47.29	S	3	3	TL			39.7	1876.7
613	6854	56691	62.61	S	3	4	BS			73.9	4628.1
614	6857	56700	17.92	H	3	4	TA			74.9	1341.9
616	6860	56693	25.44	S	3	4	BS	TL		58.4	1486.3
620	6874	56697	12.03	HS	4	4	TA	WS	BF	84.0	1011.0
622	6873	56692	3.75	S	3	4	BS			73.9	277.2
623	6869	56687	29.60	S	3	4	BS	TL		58.4	1729.3
625	6880	56694	21.66	HS	4	4	TA	WS	BF	84.0	1820.3
626	6869	56690	3.23	S	3	4	BS			71.0	229.2
627	6858	56688	7.26	H	4	2	TA			38.8	281.9
630	6874	56697	71.12	S	3	4	BS			71.0	5046.2
631	6859	56681	4.85	HS	3	4	TA	WS	BF	71.4	346.4
632	6862	56677	17.25	HS	3	3	TA	WS	BF	53.0	914.1
633	6870	56685	2.77	HS	3	3	TA	JP		53.1	147.2
635	6874	56686	4.53	S	3	4	TL			79.1	358.1
636	6866	56670	22.69	H	3	4	TA			74.9	1699.1
637	6866	56671	3.06	S	3	3	BS			44.7	136.9
638	6870	56671	1.37	H	3	4	TA			74.9	102.6
639	6871	56669	38.94	S	3	4	BS	TL		58.4	2275.0
640	6875	56667	5.40	HS	4	4	TA	WS	BF	84.0	453.8
642	6878	56665	2.66	HS	4	3	TA	WS	BF	61.3	163.0
643	6870	56660	3.76	HS	3	4	TA	WS	BF	71.4	268.5
644	6872	56659	4.28	HS	3	4	TA	JP		52.9	226.3
645	6867	56660	3.12	H	4	3	TA			57.5	179.4
646	6862	56658	28.88	HS	4	4	TA	WS	BF	84.0	2427.0
648	6865	56662	3.95	H	4	4	TA			86.3	341.0
649	6858	56660	15.62	HS	3	4	TA	WS	BF	71.4	1115.6
650	6860	56663	8.86	HS	4	4	TA	WS	BF	84.0	744.6
653	6859	56652	26.40	HS	4	4	TA	WS	BF	84.0	2218.6
655	6862	56651	18.27	H	3	3	TA			55.1	1006.2
656	6867	56654	2.45	SH	3	3	BF	WS		54.0	132.3

POLYGON ID	CENTROID UTM Zone 14		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
657	6866	56656	8.99	HS	4	2	TA	WS	BF	37.3	335.7
658	6868	56658	1.65	HS	3	3	TA	JP		59.6	98.3
659	6869	56651	114.44	HS	4	3	TA	WS	BF	61.3	7014.0
660	6873	56658	3.87	H	4	4	TA			86.3	334.1
661	6876	56656	2.18	SH	3	2	BF			25.7	56.1
662	6875	56652	8.39	HS	3	4	TA	WS	BF	71.4	599.2
663	6873	56651	4.56	S	3	4	BF	WS		80.3	366.1
664	6864	56651	2.54	SH	3	2	BF			35.7	90.8
665	6862	56650	0.50	S	3	4	BS	TL		58.4	29.2
666	6859	56650	0.76	S	3	4	BS	TL		58.4	44.4
671	6850	56650	1.05	S	3	4	BS			71.0	74.5
673	6850	56652	1.50	S	3	3	BS	BF	WS	48.9	73.3
678	6856	56653	72.62	HS	4	3	TA	WS	BF	61.3	4450.9
680	6853	56653	37.81	SH	4	4	BF	WS		67.3	2544.3
681	6850	56669	2.52	S	3	4	BS			73.9	186.3
682	6856	56689	378.55	H	4	4	TA			86.3	32676.9
683	6851	56680	19.89	H	4	4	TA			86.3	1716.9
689	6849	56690	1.60	S	3	4	BS			73.9	118.3
692	6850	56693	19.51	S	3	4	BS			73.9	1442.2
693	6853	56693	12.35	H	3	4	TA			74.9	924.8
694	6849	56698	0.72	HS	3	2	TA	WS	BF	38.3	27.5
695	6853	56702	1.75	H	3	4	TA			74.9	131.0
696	6849	56701	0.76	S	3	4	BS			71.0	53.9
697	6850	56704	7.22	S	4	4	BS	JP		77.8	561.9
698	6853	56703	13.11	S	3	4	BS			71.0	930.2
699	6856	56707	3.12	HS	4	2	TA	WS	BF	37.3	116.5
1000	6852	56709	7.15	HS	4	2	TA	WS	BF	37.3	267.0
1001	6849	56712	1.35	SH	3	2	WS			40.2	54.2
1002	6849	56715	6.40	SH	3	4	WS	BF	JP	71.7	458.7
1004	6849	56724	3.11	SH	4	4	BF	WS		67.3	209.3
1005	6850	56726	5.00	H	4	4	TA			86.3	431.6
1006	6850	56728	2.03	S	3	4	BS	BF	WS	66.9	135.9
1007	6851	56731	5.64	SH	4	4	WS	BF	JP	79.7	449.3
1008	6852	56735	8.13	SH	4	4	WS	BF	JP	79.7	647.7
1009	6850	56743	1.91	SH	4	4	WS	BF	JP	79.7	152.2
1010	6850	56745	0.90	HS	3	4	TA	WS	BF	71.4	64.3
1011	6850	56746	1.39	S	4	3	BS			50.9	70.7
1012	6849	56746	0.76	S	3	4	BS			71.0	53.9
1013	6946	56651	1.82	SH	4	3	JP	WS		52.0	94.6
1014	6901	56682	7.14	SH	4	3	JP	WS		52.0	371.3
1016	6942	56657	2.86	H	4	4	TA			86.3	246.9
1017	6904	56719	9.74	H	3	4	TA			74.9	729.4
1019	6902	56746	3.25	S	3	4	JP	WS		53.4	173.6
1020	6903	56746	0.44	HS	3	4	TA	JP		71.7	31.6
1021	6904	56746	0.01	HS	3	4	TA	JP		71.7	0.7
1022	6900	56746	7.09	H	3	4	TA			74.9	530.9
1027	6865	56736	1.95	HS	3	4	TA	JP		71.7	139.9

TOTAL FORESTED AREA (km^2) 73.72

TOTAL BIOMASS (t) 531360.4

APPENDIX 4

BIOMASS DATA FOR ALBERTA SAMPLE MAP

APPENDIX 4

BIOMASS DATA FOR ALBERTA SAMPLE MAP (Twp. 44 Rng. 16 W5 Mer.)

TABLE LEGEND

POLYGON ID: Only polygons containing forest cover are listed.

CENTROID UTM: UTM reference, to the nearest hectare, of the nominal polygon centroid

AREA: of polygons in hectares

COMMERCIALISM:

L	Lumber:	>50 m^3/ha gross coniferous sawlog volume (>40% of stems), >20 cm stump, 7 cm top
R	Roundwood:	>50 m^3/ha gross volume (>40% of stems), >13 cm stump, 7 cm top
H	High uncommercial:	>50 m^3/ha gross volume (all species), >13 cm stump, 7 cm top
U	Uncommercial:	>50 m^3/ha gross volume (all species), >13 cm stump, 7 cm top

HEIGHT CLASS:

0	0.0 to 6.0 m
1	6.1 to 12.0 m
2	12.1 to 18.0 m
3	18.1 to 24.0 m
4	24.1 to 30.0 m
5	30.1 m and over

DENSITY CLASS:

A	6 to 30% crown closure
B	31 to 50% crown closure
C	51 to 70% crown closure
D	71 to 100% crown closure

COVER SPECIES:

1	Dominant species
2	Second dominant/codominant species
3	Understory
BS	*Picea mariana* (Mill.) B.S.P. (black spruce)
LP	*Pinus contorta* Dougl. (lodgepole pine)
TA	*Populus tremuloides* (Michx.) (trembling aspen)
WS	*Picea glauca* (Moench) Voss (white spruce)

BIOMASS: Estimated dry weight of standing forest (i.e., with diameter at breast height >0) by hectare and by polygon

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMER-CIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
2	5551	58452	10.51	L	3	B	LP	TA		82.1	862.6
3	5549	58453	6.88	U	3	A	TA	BS		66.1	455.0
4	5547	58453	2.18	U	1	B	BS			20.0	43.6
7	5546	58457	8.05	L	4	A	WS			40.1	322.5
9	5551	58459	14.76	L	3	C	LP	WS		76.3	1126.6
10	5552	58460	0.69	R	2	C	BS	WS	LP	122.5	84.5
11	5551	58462	5.01	U	1	B	BS			20.0	100.2
12	5546	58461	18.62	L	4	B	WS			68.1	1268.5
14	5549	58465	4.60	L	3	B	WS			79.7	366.5
15	5552	58464	1.75	R	2	C	BS			77.5	135.7
16	5551	58467	9.95	L	3	B	LP	TA		82.1	816.6
17	5546	58465	7.47	L	3	B	WS			79.7	595.2
18	5545	58469	7.06	L	3	B	LP			41.4	292.6
20	5539	58463	2.63	L	3	C	WS			65.3	171.7
21	5542	58459	6.48	L	3	B	WS	LP		92.2	597.2
22	5538	58459	28.23	R	3	C	WS			65.3	1842.6
24	5543	58455	5.36	L	3	B	LP	WS		101.2	542.6
25	5470	58526	3.98	L	4	B	LP	WS		97.9	389.6
27	5541	58453	13.16	U	3	A	TA			54.6	718.3
28	5545	58453	3.82	R	2	C	WS	BS		100.7	384.7
29	5544	58452	1.84	U	1	B	BS			20.0	36.8
30	5540	58452	0.67	L	3	C	LP			65.4	43.8
32	5535	58453	9.24	L	4	B	LP	WS		97.9	904.4
34	5529	58455	6.20	L	3	B	WS	LP		92.2	571.4
35	5532	58455	5.64	R	2	B	BS			59.1	333.3
38	5534	58459	6.08	U	1	B	BS			20.0	121.6
40	5534	58461	6.44	L	3	C	WS	LP		115.6	744.5
41	5537	58462	10.52	U	1	C	BS			36.6	384.9
42	5523	58464	23.26	R	2	C	BS			77.5	1803.6
43	5535	58463	5.68	U	3	A	TA			54.6	310.0
44	5534	58464	13.32	L	3	C	WS	LP		115.6	1539.9
45	5531	58465	11.02	U	3	A	TA			54.6	601.5
46	5531	58467	3.77	R	3	A	LP	BS		27.2	102.4
47	5529	58466	6.58	R	3	C	LP	BS		90.3	594.3
48	5526	58468	11.05	R	3	C	LP	BS		90.3	998.0
49	5522	58470	8.77	R	3	C	LP	BS		90.3	792.0
51	5523	58460	24.24	L	4	B	LP			46.0	1114.2
52	5526	58456	12.84	R	2	C	BS			77.5	995.6
53	5521	58456	9.73	L	4	B	LP			46.0	447.3
54	5526	58453	3.99	L	4	B	WS	LP		57.2	228.3
56	5525	58452	0.61	R	2	C	WS	LP		99.1	60.5
57	5521	58452	2.12	L	4	B	LP	WS		97.9	207.5
58	5522	58454	21.52	L	3	B	WS	LP		92.2	1983.2
59	5512	58452	0.78	L	4	B	LP			46.0	35.9
60	5517	58455	19.94	L	4	C	LP			104.2	2078.6
61	5515	58459	16.46	L	3	B	LP			41.4	682.9
62	5525	58457	11.01	U	1	C	BS			36.6	402.9
63	5518	58463	6.74	L	3	C	LP			65.4	441.0
65	5514	58462	4.83	L	4	B	LP	WS		97.9	472.8
66	5514	58456	12.89	L	3	C	LP	WS		76.3	983.9
67	5518	58467	14.04	L	4	B	LP			46.0	645.4
69	5511	58465	4.10	L	4	B	LP			46.0	188.5
70	5509	58464	7.67	L	3	D	LP			95.3	730.8
72	5506	58465	3.82	L	4	A	WS			40.1	153.0
73	5508	58463	4.20	R	2	D	LP	BS		88.0	369.5
74	5506	58461	8.18	L	3	D	LP			95.3	779.4
75	5506	58458	22.91	R	2	D	BS			78.3	1793.6
76	5510	58458	16.12	L	3	C	LP	WS		76.3	1230.4
77	5512	58456	28.16	R	3	D	LP	WS		104.9	2954.4
79	5505	58456	6.72	L	3	C	LP			65.4	439.7
80	5503	58457	3.58	R	2	C	WS			69.0	247.0
81	5513	58454	24.09	U	1	C	BS			36.6	881.5
82	5507	58453	7.43	L	4	B	LP			46.0	341.5
83	5505	58453	5.54	L	4	C	LP			104.2	577.5
84	5503	58452	1.74	L	4	C	LP	WS		79.4	138.2
86	5504	58454	3.11	R	2	C	BS			77.5	241.2
90	5499	58454	3.86	L	4	B	WS			68.1	263.0
91	5502	58456	3.69	L	3	B	WS	LP		92.2	340.1
93	5502	58458	14.31	L	3	D	LP			95.3	1363.5
94	5501	58459	4.27	R	2	C	WS			69.0	294.6
95	5499	58456	11.51	L	3	C	WS	LP		115.6	1330.7
97	5501	58462	10.08	L	3	C	WS			65.3	657.9
98	5501	58464	6.84	L	3	C	WS			65.3	446.5
99	5497	58464	3.71	L	3	D	WS	LP		99.3	368.5
105	5498	58466	5.45	L	3	B	WS			79.7	434.2

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMER-CIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
106	5493	58469	43.77	L	3	D	LP			95.3	4170.6
107	5489	58467	6.40	U	1	C	BS			36.6	234.2
108	5491	58465	45.80	L	3	C	LP			65.4	2997.0
110	5493	58461	8.05	U	3	A	WS			44.4	357.5
111	5497	58461	8.71	L	3	C	WS	LP		115.6	1007.0
112	5490	58461	4.93	R	2	D	LP	BS		88.0	433.7
114	5494	58457	20.50	L	3	B	LP			41.4	849.5
115	5490	58457	9.82	L	3	C	LP			65.4	642.6
116	5492	58456	2.76	U	1	C	WS			4.6	12.8
117	5497	58458	5.07	L	4	B	WS			68.1	345.4
118	5490	58455	9.34	L	3	A	WS			44.4	414.8
119	5493	58455	3.15	L	3	B	LP	WS		101.2	318.9
120	5496	58457	8.78	L	3	B	WS	TA		57.7	506.7
121	5497	58452	3.72	L	3	B	WS			79.7	296.4
123	5503	58476	1.18	U	2	A	WS	LP		32.3	38.1
124	5489	58453	8.58	R	2	B	LP	WS		62.7	538.1
125	5491	58453	4.18	U	3	A	WS			44.4	185.6
126	5481	58453	7.18	L	3	B	LP			41.4	297.5
127	5483	58455	5.94	L	3	C	LP			65.4	388.7
128	5484	58456	30.33	L	3	B	LP			41.4	1256.8
129	5481	58459	4.35	L	3	B	WS			79.7	346.6
130	5487	58459	27.15	R	3	D	LP			95.3	2587.0
131	5486	58461	4.85	L	3	B	LP			41.4	201.0
132	5481	58461	3.43	L	3	C	LP			65.4	224.4
133	5484	58464	6.24	L	3	C	LP			65.4	408.3
134	5487	58463	4.32	R	2	D	LP	BS		88.0	380.1
135	5490	58459	16.92	R	2	D	LP			86.6	1465.0
136	5486	58467	3.85	R	3	D	LP			95.3	366.8
137	5478	58470	31.23	U	4	A	WS			40.1	1251.1
138	5474	58465	9.27	R	3	A	WS			44.4	411.7
139	5475	58465	3.16	L	3	C	WS	LP		115.6	365.3
140	5478	58465	2.01	R	2	B	BS	LP		51.9	104.3
142	5478	58464	2.13	U	1	A	WS			6.3	13.4
143	5479	58459	10.12	L	3	C	LP			65.4	662.2
144	5475	58457	10.45	U	3	A	LP			27.2	283.9
145	5479	58456	3.39	U	2	A	WS			36.6	124.0
146	5476	58455	9.38	L	3	C	LP			65.4	613.8
147	5471	58456	70.38	L	3	B	LP			41.4	2916.5
148	5478	58452	1.04	L	3	C	LP			65.4	68.1
149	5467	58452	3.85	L	3	C	LP			65.4	251.9
150	5464	58452	2.58	L	3	B	LP			41.4	106.9
152	5467	58455	15.31	R	2	C	LP			87.4	1337.4
153	5471	58461	7.02	U	3	A	WS			44.4	311.8
154	5471	58465	1.25	L	3	C	LP			65.4	81.8
156	5469	58467	30.41	L	3	B	WS	LP		92.2	2802.5
157	5466	58465	5.22	L	3	C	LP			65.4	341.6
158	5473	58463	80.08	L	3	B	LP	WS		101.2	8106.2
159	5469	58461	5.05	R	2	C	LP	WS		92.2	465.4
160	5467	58460	3.13	L	3	A	WS			44.4	139.0
161	5462	58457	11.95	L	2	B	LP			54.2	648.0
162	5457	58462	0.38	L	3	C	LP			65.4	24.9
162	5462	58454	30.63	L	3	C	LP			65.4	2004.3
162	5457	58461	0.07	L	3	C	LP			65.4	4.6
164	5459	58452	3.09	L	3	B	LP			41.4	128.0
165	5457	58455	1.34	L	3	B	LP			41.4	55.5
166	5458	58459	6.95	U	1	B	LP			20.2	140.7
167	5460	58462	23.91	R	3	A	WS			44.4	1061.8
168	5459	58461	2.20	L	2	B	WS			64.9	142.8
169	5460	58469	45.80	U	1	A	WS			6.3	288.9
170	5457	58464	0.29	L	3	C	WS			65.3	18.9
171	5457	58467	0.35	R	3	A	WS			44.4	15.5
172	5460	58466	7.07	L	3	B	LP			41.4	293.0
172	5457	58470	0.75	L	3	B	LP			41.4	31.1
173	5460	58466	2.68	U	1	B	LP			20.2	54.3
174	5457	58472	1.54	L	3	C	LP			65.4	100.8
175	5458	58473	4.71	U	2	A	LP			56.5	266.0
177	5464	58468	4.54	U	1	C	LP			30.6	138.8
179	5464	58473	12.75	R	2	B	LP			54.2	691.4
180	5459	58473	5.09	L	3	B	LP			41.4	210.9
181	5458	58480	7.77	U	2	A	WS			36.6	284.2
182	5458	58482	2.76	R	2	C	LP	WS		92.2	254.3
183	5459	58483	18.42	U	3	A	WS			44.4	818.0
184	5462	58478	36.44	L	3	B	LP			41.4	1510.0
185	5469	58481	63.62	L	3	C	LP			65.4	4163.0
188	5469	58476	5.48	R	2	B	LP			54.2	297.2

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMERCIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
191	5464	58474	6.85	R	2	B	LP			54.2	371.5
192	5466	58468	6.27	U	3	A	WS			44.4	278.5
196	5472	58473	9.77	U	2	B	LP	WS		62.7	612.7
197	5476	58473	7.33	L	4	A	WS			40.1	293.6
198	5472	58477	15.40	L	3	A	LP			27.2	418.4
199	5476	58477	2.90	L	3	C	LP			65.4	189.8
200	5479	58479	22.85	L	3	B	LP			41.4	946.9
201	5475	58480	21.33	U	3	A	LP			27.2	579.5
204	5487	58483	23.11	L	3	B	LP			41.4	957.7
207	5483	58477	2.13	L	3	B	LP			41.4	88.3
208	5481	58474	16.04	U	1	C	LP			30.6	490.2
209	5482	58472	7.70	U	4	A	LP			46.8	360.2
210	5486	58471	17.36	L	3	B	LP			41.4	719.4
212	5491	58471	22.57	R	2	C	LP			87.4	1971.6
213	5490	58473	4.22	U	1	B	LP			20.2	85.5
214	5495	58470	7.86	R	2	B	BS			59.1	464.6
215	5495	58472	8.66	R	3	D	LP	BS		104.9	908.6
217	5492	58478	2.39	L	3	B	LP			41.4	99.0
218	5493	58476	5.82	L	3	B	LP			41.4	241.2
219	5493	58482	10.29	U	1	B	LP	WS		16.2	166.5
221	5499	58481	5.55	R	2	C	BS			77.5	430.4
222	5497	58477	26.49	R	3	D	LP			95.3	2524.1
223	5503	58476	6.08	H	3	B	TA			67.4	409.9
224	5500	58471	18.53	R	3	D	LP			95.3	1765.6
225	5503	58471	3.66	L	3	B	LP			41.4	151.7
226	5502	58469	5.68	R	2	D	BS			78.3	444.7
227	5504	58471	13.23	L	4	B	WS	LP		57.2	756.9
228	5505	58470	4.67	L	4	C	LP			104.2	486.8
233	5506	58471	7.65	L	4	C	WS	LP		84.8	648.5
234	5508	58467	8.53	L	3	B	WS			79.7	679.6
235	5510	58470	17.77	L	3	D	LP			95.3	1693.2
236	5513	58470	11.45	R	2	C	BS	LP		68.8	788.1
237	5509	58475	19.89	L	4	D	LP			94.1	1870.7
241	5507	58477	3.67	L	3	B	LP	WS		101.2	371.5
244	5506	58481	68.79	L	4	C	LP			104.2	7170.7
245	5507	58483	16.11	R	2	B	BS			59.1	952.2
246	5519	58484	4.34	U	3	A	WS			44.4	192.7
248	5517	58479	18.74	L	4	B	LP			46.0	861.4
249	5513	58478	2.58	H	3	B	TA			67.4	174.0
250	5515	58477	8.70	L	4	B	LP			46.0	399.9
252	5519	58476	6.43	L	3	B	WS			79.7	512.3
253	5515	58473	5.84	L	3	A	WS			44.4	259.4
255	5513	58473	3.28	L	3	B	WS			79.7	261.3
256	5520	58470	7.16	R	2	B	BS			59.1	423.2
257	5517	58471	23.88	L	3	C	LP			65.4	1562.6
260	5525	58475	6.58	R	3	B	LP			41.4	272.7
261	5524	58476	8.91	U	1	C	BS			36.6	326.0
263	5521	58475	24.68	L	3	C	LP			65.4	1615.0
264	5521	58480	12.25	L	3	C	LP	WS		76.3	935.0
265	5523	58483	6.78	L	3	C	LP			65.4	443.7
266	5534	58478	40.21	L	3	C	LP			65.4	2631.2
267	5530	58479	2.79	R	2	B	BS			59.1	164.9
268	5533	58480	20.00	L	3	B	LP	TA		82.1	1641.5
269	5535	58482	14.60	R	3	C	LP			65.4	955.4
273	5529	58472	20.17	L	3	C	LP			65.4	1319.8
274	5533	58472	16.88	U	2	A	BS	TA		58.2	982.6
276	5536	58469	4.77	L	3	B	LP			41.4	197.7
277	5532	58470	6.12	R	3	D	LP			95.3	583.1
278	5532	58467	6.36	U	1	C	BS			36.6	232.7
279	5537	58469	5.39	U	3	A	WS			44.4	239.4
280	5538	58467	2.41	L	3	B	TA			67.4	162.5
281	5540	58468	16.77	U	1	C	BS			36.6	613.6
282	5539	58472	4.53	L	3	B	LP			41.4	187.7
284	5538	58477	18.88	L	3	B	LP	TA		82.1	1549.5
285	5537	58479	13.51	U	1	B	BS			20.0	270.2
286	5542	58480	31.78	U	1	C	BS			36.6	1162.9
287	5542	58476	16.45	L	4	C	LP			104.2	1714.8
288	5542	58474	7.03	R	2	C	BS			77.5	545.1
290	5547	58469	8.13	U	2	A	BS			38.1	309.5
291	5550	58470	12.32	R	3	C	LP	BS		90.3	1112.7
292	5544	58470	12.36	R	2	C	BS			77.5	958.4
293	5552	58471	1.07	R	2	C	BS			77.5	83.0
296	5550	58472	2.06	R	2	C	BS	LP		68.8	141.8
298	5548	58473	13.24	R	2	B	BS	WS		82.8	1096.2
299	5546	58475	13.39	L	3	B	TA	LP		89.1	1192.8

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMER-CIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
300	5551	58475	4.03	R	2	C	BS			77.5	312.5
301	5551	58477	3.04	M	3	C	TA			92.1	280.0
302	5551	58478	1.57	R	3	D	LP			95.3	149.6
303	5547	58478	15.90	R	3	B	LP	BS		105.8	1682.2
304	5550	58480	12.50	L	3	C	LP	WS		76.3	954.1
306	5551	58481	3.58	U	1	A	BS			7.2	25.9
307	5550	58482	3.11	U	1	C	BS			36.6	113.8
308	5545	58486	7.79	R	2	C	BS	LP		68.8	536.2
311	5551	58495	9.75	U	1	C	BS			36.6	356.8
312	5547	58497	11.51	R	2	C	LP	BS		83.2	958.0
313	5541	58497	17.80	L	3	C	LP			65.4	1164.8
315	5537	58496	3.96	L	4	B	TA	WS		40.3	159.6
316	5538	58492	11.85	R	2	B	BS			59.1	700.4
317	5536	58488	22.78	L	3	C	LP			65.4	1490.6
318	5539	58488	8.32	U	1	C	BS			36.6	304.4
319	5538	58486	11.64	R	3	D	LP			95.3	1109.1
320	5541	58485	28.47	L	3	B	LP	TA		82.1	2336.6
322	5533	58484	6.85	R	3	B	LP			41.4	283.9
324	5530	58485	7.42	U	1	B	BS			20.0	148.4
325	5532	58486	8.43	R	2	D	BS	LP		78.5	661.6
326	5529	58488	25.36	L	3	C	LP			65.4	1659.5
327	5532	58490	13.93	U	1	B	BS			20.0	278.6
329	5529	58491	4.32	L	4	B	LP			46.0	198.6
330	5529	58495	17.02	L	3	C	WS	LP		115.6	1967.7
331	5524	58498	8.07	M	3	B	TA			67.4	544.1
332	5523	58496	6.19	L	3	C	WS	LP		115.6	715.6
333	5525	58495	19.41	L	3	C	WS	LP		115.6	2244.0
337	5523	58492	16.94	L	4	C	WS	LP		84.8	1436.0
340	5527	58489	14.23	L	3	C	WS	LP		115.6	1645.1
342	5524	58486	16.50	L	4	B	LP	WS		97.9	1615.0
344	5520	58490	7.23	L	4	B	WS	LP		57.2	413.7
345	5515	58485	43.46	L	4	B	LP			46.0	1997.7
346	5518	58488	20.75	L	4	C	LP			104.2	2163.0
347	5514	58488	10.56	L	3	C	LP			65.4	691.0
348	5513	58491	14.27	R	3	B	LP	BS		105.8	1509.7
349	5516	58493	5.02	R	3	B	LP			41.4	208.0
351	5519	58490	7.45	R	2	B	BS			59.1	440.3
353	5518	58496	30.93	L	3	C	LP			65.4	2023.9
354	5516	58498	6.79	L	3	B	LP			41.4	281.4
355	5510	58498	7.69	R	3	B	LP	BS		105.8	813.6
356	5508	58499	26.62	L	3	C	LP	WS		76.3	2031.8
357	5513	58497	18.38	R	2	B	BS			59.1	1086.3
358	5509	58495	5.92	U	1	D	BS			45.4	268.8
359	5504	58495	11.92	U	1	C	BS			36.6	436.2
361	5504	58491	52.07	L	4	C	LP			104.2	5427.8
362	5508	58487	34.54	L	3	B	LP			41.4	1431.3
363	5505	58486	5.01	L	3	C	LP			65.4	327.8
364	5501	58484	9.33	R	2	B	BS			59.1	551.4
365	5499	58488	31.11	R	3	D	LP	BS		104.9	3263.9
366	5498	58490	3.88	R	2	C	BS			77.5	300.9
371	5502	58497	14.84	R	2	D	BS			78.3	1161.8
372	5500	58499	4.14	U	1	C	BS			36.6	151.5
373	5497	58499	12.28	U	1	C	BS			36.6	449.4
377	5490	58492	12.67	R	3	D	WS	LP		99.3	1258.3
378	5492	58493	2.88	R	2	B	BS			59.1	170.2
379	5496	58492	11.61	U	1	C	BS			36.6	424.8
380	5492	58491	5.92	L	3	B	LP			41.4	245.3
383	5494	58486	6.10	R	3	B	LP			41.4	252.8
384	5491	58484	9.44	R	2	B	BS	LP		51.9	489.7
385	5487	58484	3.57	R	2	C	BS	LP		68.8	245.7
386	5485	58484	4.64	R	3	C	LP			65.4	303.6
389	5489	58488	6.34	U	1	C	SB			36.6	232.0
390	5488	58485	5.04	L	3	B	LP	BS		105.8	533.2
391	5480	58491	3.22	R	3	C	LP			65.4	210.7
392	5486	58490	4.72	U	1	B	WS	BS		9.3	43.9
393	5483	58492	29.27	R	3	C	LP			65.4	1915.3
395	5488	58493	7.33	R	2	B	BS			59.1	433.2
397	5482	58499	4.38	R	3	B	LP			41.4	181.5
398	5479	58498	6.87	R	3	C	LP			65.4	449.5
399	5473	58499	5.01	M	3	D	TA			67.6	338.8
400	5473	58495	35.31	L	3	C	LP			65.4	2310.5
401	5477	58489	1.69	R	3	C	LP			65.4	110.6
402	5479	58489	31.68	R	3	C	LP			65.4	2073.0
403	5476	58488	6.88	L	3	B	LP			41.4	285.1
404	5478	58484	9.57	U	1	C	BS			36.6	350.2

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMER-CIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
405	5474	58483	1.94	L	3	C	LP			65.4	126.9
407	5471	58483	15.17	U	3	A	TA			54.6	828.0
409	5468	58487	7.07	U	1	C	WS			4.6	32.7
410	5470	58487	7.22	L	4	C	LP	WS		79.4	573.4
411	5467	58488	3.00	M	3	A	TA			54.6	163.7
412	5465	58490	21.14	U	3	A	LP			27.2	574.4
413	5469	58490	3.04	M	3	C	TA			92.1	280.0
414	5473	58489	7.43	L	3	C	LP			65.4	486.2
417	5470	58494	4.16	L	3	C	LP	TA		104.0	432.6
419	5465	58499	8.66	R	2	C	LP			87.4	756.5
420	5467	58497	10.24	L	3	C	LP	TA		104.0	1064.9
421	5466	58494	8.87	U	3	A	LP	TA		63.3	561.8
422	5463	58493	7.46	M	3	B	TA			67.4	503.0
423	5466	58492	4.49	L	3	C	WS			65.3	293.1
424	5462	58488	4.24	M	3	B	TA			67.4	285.9
425	5463	58485	13.86	U	1	A	LP	WS		25.0	346.9
426	5527	58507	7.46	U	3	A	LP			27.2	202.7
427	5460	58486	7.43	R	2	C	LP	WS		92.2	684.7
429	5457	58490	0.12	L	3	A	WS			44.4	5.3
430	5458	58488	13.89	L	3	A	WS			44.4	616.9
432	5457	58492	0.80	M	3	C	TA			92.1	73.7
433	5459	58492	11.45	M	3	C	TA			92.1	1054.7
434	5459	58494	9.30	U	3	A	WS			44.4	413.0
436	5464	58495	9.62	L	3	B	LP	WS		101.2	973.8
437	5459	58498	19.57	M	3	C	TA			92.1	1802.7
439	5461	58500	8.43	L	3	C	LP			65.4	551.6
440	5464	58501	16.98	L	3	C	LP			65.4	1111.1
441	5458	58502	5.92	U	2	C	LP			87.4	517.1
443	5457	58504	2.12	U	1	C	BS			36.6	77.6
444	5457	58508	1.32	R	2	C	LP	TA		82.2	108.5
445	5462	58507	8.19	L	3	C	LP			65.4	535.9
446	5459	58510	48.80	L	3	C	LP			65.4	3193.3
448	5464	58512	3.92	R	2	C	BS			77.5	304.0
449	5468	58509	39.07	R	3	C	LP			65.4	2556.6
451	5465	58505	12.22	L	3	C	LP	TA		104.0	1270.8
452	5468	58504	6.89	R	3	C	LP	BS		90.3	622.3
453	5472	58501	8.52	L	3	C	LP	TA		104.0	886.0
454	5472	58503	8.74	M	3	D	TA			67.6	591.0
455	5476	58501	6.90	L	3	C	LP			65.4	451.5
456	5475	58504	14.01	R	3	C	TA	LP		107.5	1506.5
457	5475	58508	29.81	L	3	C	LP			65.4	1950.6
458	5479	58514	10.47	M	3	C	TA			92.1	964.5
459	5481	58510	6.44	R	3	D	LP			95.3	613.6
460	5486	58514	5.02	L	3	C	LP			65.4	328.5
461	5485	58512	8.38	L	3	C	LP			65.4	548.4
462	5485	58507	12.48	R	3	D	LP			95.3	1189.1
463	5481	58507	14.25	R	3	D	LP			95.3	1357.8
464	5484	58504	21.13	R	2	C	LP			87.4	1845.8
465	5482	58502	11.58	U	1	C	BS			36.6	423.7
466	5483	58501	7.27	R	3	B	LP	BS		105.8	769.1
467	5488	58501	9.43	R	2	D	LP			86.6	816.5
468	5491	58501	8.30	R	3	C	LP			65.4	543.1
469	5494	58502	17.37	L	3	C	LP			65.4	1136.6
470	5489	58504	9.25	L	3	C	LP			65.4	605.3
471	5493	58506	11.65	U	1	B	BS	LP		11.7	136.4
472	5491	58507	2.83	R	2	C	LP	BS		83.2	235.5
474	5492	58510	12.43	U	1	C	BS			36.6	454.8
475	5489	58508	6.41	R	3	B	LP			41.4	265.6
476	5489	58514	8.69	R	2	B	LP	BS		63.7	553.4
477	5495	58513	10.81	R	3	C	LP			65.4	707.4
479	5491	58514	0.94	L	3	B	LP			41.4	39.0
480	5502	58512	28.23	R	2	D	BS	LP		78.5	2215.5
484	5498	58508	2.10	R	2	D	BS	LP		78.5	164.8
485	5504	58507	7.38	R	3	C	LP			65.4	482.9
486	5500	58507	7.66	U	3	A	LP			27.2	208.1
488	5503	58504	7.99	M	3	C	TA			92.1	736.0
489	5499	58505	9.95	R	3	C	LP			65.4	651.1
490	5497	58504	9.35	U	1	B	BS			20.0	187.0
491	5497	58501	11.63	U	3	A	LP	BS		27.2	316.0
492	5505	58500	8.19	L	3	B	LP			41.4	339.4
493	5505	58502	27.01	U	1	C	BS			36.6	988.4
495	5516	58503	18.49	R	3	C	LP			65.4	1209.9
496	5510	58503	7.82	R	2	D	BS	LP		78.5	613.7
497	5507	58505	4.46	R	2	D	LP	BS		88.0	392.4
498	5510	58507	24.80	U	1	C	BS			36.6	907.5

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMERCIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
499	5512	58508	6.58	R	2	C	BS	LP		68.8	452.9
502	5510	58510	5.68	U	1	C	BS			36.6	207.8
503	5507	58511	3.78	U	1	D	BS			45.4	171.6
504	5509	58512	5.04	R	3	B	LP	BS		105.8	533.2
506	5509	58515	3.35	R	2	C	LP	BS		83.2	278.8
508	5515	58512	9.70	L	4	B	TA	WS		40.3	391.0
511	5519	58514	6.68	R	3	C	WS	BS		63.7	425.7
514	5518	58507	15.34	L	4	B	WS	TA		67.9	1042.2
515	5515	58506	9.37	L	3	C	WS	LP		115.6	1083.3
516	5519	58504	5.14	L	4	C	LP			104.2	535.8
517	5518	58500	5.62	L	3	C	WS	TA		70.0	393.6
518	5520	58501	22.08	L	3	C	LP	WS		76.3	1685.3
521	5525	58501	20.71	L	3	D	LP	TA	WS	79.5	1645.9
522	5529	58509	32.43	U	1	D	BS			45.4	1472.4
523	5521	58506	8.37	L	4	B	WS			68.1	570.2
526	5527	58507	10.17	R	3	C	LP	TA	SB	104.0	1057.6
527	5526	58511	15.54	L	3	C	LP	TA		104.0	1616.0
528	5523	58511	13.54	L	3	D	LP	WS		75.8	1025.7
529	5521	58512	8.81	L	4	B	WS			68.1	600.2
530	5520	58516	3.47	L	3	C	WS			65.3	226.5
532	5524	58516	6.17	L	4	B	WS			68.1	420.3
533	5525	58514	4.85	L	5	B	WS			68.1	330.4
534	5525	58513	9.64	R	3	D	LP			95.3	918.5
536	5532	58515	9.85	R	3	C	LP			65.4	644.5
538	5533	58510	15.90	L	3	C	LP	TA		104.0	1653.5
539	5533	58506	4.79	L	4	C	LP			104.2	499.3
542	5529	58500	7.65	U	1	C	BS			36.6	279.9
543	5544	58500	26.18	L	4	C	TA	WS	LP	92.4	2418.8
544	5542	58503	6.47	U	1	D	BS			45.4	293.8
545	5538	58505	15.97	U	1	C	BS			36.6	584.4
546	5537	58508	5.20	R	2	C	LP			87.4	454.3
549	5547	58501	9.57	R	2	D	LP			86.6	828.6
551	5550	58502	29.77	R	2	D	LP			86.6	2577.6
552	5552	58504	0.63	R	2	D	BS	LP		78.5	49.4
554	5545	58514	66.57	R	2	C	LP	BS		83.2	5540.5
555	5545	58516	0.40	L	3	C	WS	LP		115.6	46.2
557	5547	58518	0.81	U	3	A	TA			54.6	44.2
559	5551	58518	3.23	L	3	B	TA	WS		87.2	281.7
559	5552	58519	0.63	L	3	B	TA	WS		87.2	54.9
561	5546	58522	27.28	L	3	A	TA	WS		62.2	1697.4
562	5551	58522	3.35	L	3	B	WS			79.7	266.9
564	5549	58526	11.03	H	3	C	TA			92.1	1016.1
565	5551	58527	1.88	L	3	C	TA	LP		107.5	202.2
566	5549	58529	18.82	L	4	B	TA	WS		40.3	758.7
567	5545	58528	14.05	R	2	C	BS	LP		68.8	967.1
569	5540	58530	22.29	U	1	C	BS			36.6	815.6
571	5539	58527	2.65	R	2	C	LP	BS		83.2	220.6
572	5542	58527	7.38	U	1	D	BS			45.4	335.1
573	5537	58523	10.74	R	3	C	LP	TA		104.0	1116.9
574	5542	58521	7.13	R	3	B	TA	WS		87.2	621.9
575	5543	58522	4.17	R	3	D	LP			95.3	397.3
576	5539	58519	6.25	H	3	A	TA			54.6	341.1
577	5537	58520	8.18	U	1	A	WS	TA		6.9	56.8
579	5537	58518	14.02	U	3	A	TA			54.6	765.2
580	5544	58517	9.68	L	3	C	WS			65.3	631.8
581	5539	58516	9.99	H	3	B	TA			67.4	673.6
582	5530	58515	19.71	L	4	B	WS			68.1	1342.7
585	5532	58520	10.19	U	1	B	WS	TA		5.4	54.8
587	5528	58519	4.52	L	3	B	WS			79.7	360.1
590	5531	58523	10.87	H	3	B	TA			67.4	732.9
591	5533	58525	9.58	R	2	C	BS	LP		68.8	659.4
594	5525	58524	14.72	L	3	C	LP	TA		104.0	1530.7
595	5525	58521	12.20	R	3	C	LP			65.4	798.3
596	5526	58519	4.48	L	4	B	LP			46.0	205.9
597	5523	58519	5.37	R	2	B	BS	LP		51.9	278.6
599	5520	58519	4.14	R	3	C	LP			65.4	270.9
601	5522	58518	2.05	U	2	A	TA			50.2	103.0
604	5515	58514	4.42	U	2	A	TA			50.2	222.1
605	5513	58513	12.53	L	3	C	LP			65.4	819.9
607	5514	58517	5.48	R	2	B	LP	BS		63.7	349.0
608	5518	58522	6.21	U	1	C	BS			36.6	227.2
609	5519	58521	18.55	U	1	C	LP	BS		18.0	334.0
611	5516	58524	2.32	U	1	D	BS			45.4	105.3
612	5522	58528	19.81	U	1	C	BS			36.6	724.9
613	5517	58526	7.64	R	2	C	BS	LP		68.8	525.9

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMERCIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
614	5510	58527	49.88	U	1	B	BS			20.0	997.5
615	5508	58530	13.23	U	1	B	BS			20.0	264.6
616	5511	58524	7.26	U	1	C	BS			36.6	265.7
619	5509	58516	19.38	U	1	C	BS			36.6	709.2
620	5506	58518	2.56	U	2	A	LP	BS		59.5	152.3
621	5502	58517	6.74	R	2	C	LP			87.4	588.8
622	5502	58518	4.66	L	3	B	LP	BS		105.8	493.0
623	5499	58521	22.97	U	1	C	BS			36.6	840.5
624	5504	58524	24.29	R	2	C	LP	BS		83.2	2021.6
625	5497	58524	21.43	L	3	B	LP			41.4	888.0
626	5502	58526	3.50	R	3	C	LP			65.4	229.0
627	5505	58527	2.41	H	2	C	TA			41.4	99.9
629	5502	58528	17.20	U	1	C	LP	BS		18.0	309.7
630	5498	58530	13.14	L	3	C	TA	WS		91.2	1198.6
631	5496	58527	8.67	U	1	B	BS			20.0	173.4
632	5490	58531	7.92	L	3	C	LP			65.4	518.3
633	5496	58524	3.32	R	2	D	BS	LP		78.5	260.6
635	5490	58522	8.26	L	3	B	LP			41.4	342.3
637	5491	58520	11.88	R	3	C	LP	BS		90.3	1072.9
638	5491	58517	6.91	L	3	B	LP			41.4	286.3
639	5494	58515	11.96	L	3	C	LP			65.4	782.6
641	5483	58518	5.88	U	3	A	LP	TA		63.3	372.4
644	5487	58519	8.70	L	3	C	LP			65.4	569.3
645	5483	58521	3.95	R	2	C	LP	BS		83.2	328.7
646	5481	58520	5.84	R	3	D	LP			95.3	556.5
647	5482	58524	3.57	R	2	C	BS	LP		68.8	245.7
648	5483	58525	3.59	U	1	C	BS			36.6	131.4
649	5485	58522	4.26	U	2	A	BS	LP		59.5	253.4
650	5485	58526	7.37	L	3	B	LP			41.4	305.4
651	5484	58531	21.07	R	3	D	LP			95.3	2002.9
652	5485	58528	22.31	L	3	B	LP			41.4	924.5
654	5475	58532	19.08	L	3	C	LP			65.4	1248.5
656	5478	58528	10.53	R	3	B	LP			41.4	436.4
657	5479	58524	8.59	L	3	C	LP	WS		76.3	655.7
658	5476	58525	22.94	L	3	C	LP			65.4	1501.1
659	5479	58520	9.54	H	3	B	TA	LP		89.1	849.8
660	5476	58516	10.92	R	3	C	LP	TA		104.0	1135.6
661	5473	58516	9.28	R	3	C	LP			65.4	607.2
663	5468	58514	7.70	U	1	B	LP	BS		9.6	74.0
665	5465	58523	7.90	U	1	C	BS			36.6	289.1
666	5467	58524	23.96	R	3	A	TA	LP		66.1	1584.6
667	5469	58526	4.89	H	3	B	TA			67.4	329.7
668	5472	58521	7.40	R	3	A	LP			27.2	201.1
670	5467	58530	5.13	U	1	B	BS			20.0	102.6
671	5464	58527	10.44	R	3	C	LP			65.4	683.1
674	5457	58521	0.89	L	3	B	LP			41.4	36.9
675	5458	58522	6.25	U	1	B	LP	BS		9.6	60.1
676	5458	58525	7.50	L	3	B	LP			41.4	310.8
678	5460	58527	6.49	R	2	D	BS			78.3	508.1
684	5462	58531	10.03	U	1	C	BS			36.6	367.0
685	5464	58533	7.53	R	2	C	LP	BS		83.2	626.7
686	5460	58534	8.70	L	4	C	LP			104.2	906.9
687	5458	58534	8.65	L	3	C	LP			65.4	566.0
689	5463	58534	7.56	L	4	B	LP			46.0	347.5
690	5460	58537	12.15	L	3	C	LP			65.4	795.0
691	5457	58536	0.36	R	3	C	LP			65.4	23.6
691	5458	58539	3.42	R	3	C	LP			65.4	223.8
695	5459	58540	2.22	L	3	B	LP			41.4	92.0
696	5457	58542	1.41	R	3	C	LP			65.4	92.3
698	5464	58539	43.14	L	3	B	LP			41.4	1787.7
700	5461	58546	13.80	R	3	D	LP			95.3	1314.9
702	5463	58544	6.50	R	3	B	LP			41.4	269.4
704	5469	58544	12.03	R	3	B	LP			41.4	498.5
709	5472	58540	4.02	R	2	C	LP	BS		83.2	334.6
712	5468	58540	10.12	L	3	C	LP			65.4	662.2
714	5468	58534	4.57	R	3	C	LP	WS		76.3	348.8
716	5472	58534	21.43	L	3	C	LP			65.4	1402.3
717	5479	58532	6.82	L	3	C	LP			65.4	446.3
718	5475	58535	11.19	R	3	C	LP			65.4	732.2
721	5478	58541	49.79	R	3	C	LP			65.4	3258.0
724	5476	58546	11.17	H	4	B	TA			59.6	665.6
725	5479	58546	3.69	R	3	C	LP			65.4	241.5
726	5486	58546	8.75	L	3	B	LP	WS		101.2	885.7
727	5489	58545	15.50	L	3	B	LP	WS		101.2	1569.0
728	5482	58543	6.76	R	3	B	LP	BS		105.8	715.2

POLYGON ID	CENTROID UTM Zone 11		AREA (ha)	COMMER-CIALISM	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
729	5482	58541	11.17	U	1	B	BS			20.0	223.4
730	5484	58540	12.19	L	3	C	LP			65.4	797.7
731	5485	58537	23.34	U	1	A	BS	WS		8.1	188.8
732	5487	58536	5.80	L	3	C	LP			65.4	379.5
734	5481	58533	11.00	R	3	D	LP			95.3	1048.1
735	5493	58533	9.77	L	3	C	LP			65.4	639.3
736	5495	58532	14.50	L	3	D	LP			95.3	1381.6
737	5495	58536	5.91	R	2	C	BS	LP		68.8	406.8
738	5493	58535	6.82	R	2	B	BS			59.1	403.1
739	5490	58536	3.72	L	3	C	LP			65.4	243.4
740	5492	58539	8.76	R	3	C	TA	LP		107.5	942.0
742	5490	58541	15.81	R	2	D	LP	BS		88.0	1391.0
743	5492	58546	5.56	U	1	C	BS			36.6	203.5
745	5495	58545	11.36	R	3	C	LP			65.4	743.4
746	5495	58547	0.96		1	C	BS			36.6	35.1
746	5497	58546	3.99	U	1	C	BS			36.6	146.0
747	5497	58545	6.64	R	2	D	BS	WS	LP	106.2	705.3
748	5502	58546	1.23	U	1	C	WS			36.6	45.0
748	5499	58546	2.18	U	1	C	BS			36.6	79.8
750	5500	58541	17.22	R	3	D	LP			95.3	1640.8
751	5498	58542	5.82	L	3	C	LP	TA	WS	104.0	605.2
752	5497	58539	15.12	U	1	C	BS			36.6	553.3
753	5504	58537	13.94	U	1	C	BS			36.6	510.1
754	5503	58534	8.44	U	1	C	BS			36.6	308.8
755	5504	58531	20.17	R	2	B	BS			59.1	1192.1
756	5499	58532	8.45	U	1	D	BS			45.4	383.7
757	5511	58531	9.42	R	2	B	BS			59.1	556.8
758	5510	58534	1.94	L	3	C	LP			65.4	126.9
759	5509	58537	5.17	R	2	B	BS			59.1	305.6
760	5511	58537	15.89	R	3	D	LP			95.3	1514.1
761	5507	58540	25.80	R	1	B	BS			20.0	515.9
762	5507	58542	1.52	R	2	D	BS	TA		20.1	30.6
763	5507	58545	24.20	R	2	C	BS			77.5	1876.5
764	5511	58546	1.61	R	3	D	LP			95.3	153.4
766	5511	58543	11.99	L	3	D	LP			95.3	1142.5
767	5515	58538	7.41	L	3	C	TA	LP		107.5	796.8
768	5518	58546	8.21	R	3	D	LP	TA		79.5	652.5
768	5515	58543	15.64	R	3	D	LP	TA		79.5	1243.0
769	5518	58542	21.56	R	2	C	BS			77.5	1671.8
771	5516	58532	15.59	L	3	C	LP	TA	WS	104.0	1621.2
772	5519	58532	5.73	R	2	C	BS			77.5	444.3
773	5520	58536	5.91	R	2	C	TA	BS		51.7	305.7
774	5526	58533	5.38	R	2	B	BS	LP		51.9	279.1
776	5524	58539	3.21	R	3	D	LP			95.3	305.9
777	5527	58537	20.23	U	2	C	SB			77.5	1568.7
778	5521	58542	10.76	R	3	D	LP			95.3	1025.3
779	5525	58542	29.09	R	3	D	TA	LP		124.4	3619.0
781	5523	58546	6.42	U	1	C	BS			36.6	234.9
782	5528	58545	0.65	R	2	D	LP	BS		88.0	57.2
783	5527	58544	5.23	R	2	D	LP	BS		88.0	460.1
784	5530	58544	7.23	U	1	C	BS			36.6	264.6
786	5530	58541	5.60	R	2	B	BS	LP		51.9	290.5
787	5531	58535	4.30	R	2	D	LP	BS		88.0	378.3
789	5537	58535	24.65	R	2	D	LP	BS		88.0	2168.7
790	5542	58535	29.43	R	2	D	LP	BS		88.0	2589.3
791	5541	58538	4.54	U	1	C	BS			36.6	166.1
796	5544	58547	0.15	R	3	B	LP	BS		105.8	15.9
797	5546	58540	6.24	R	3	D	LP	BS		104.9	654.7
800	5547	58536	3.61	U	1	D	BS			45.4	163.9
801	5550	58533	20.28	R	3	B	LP			41.4	840.4
803	5550	58538	4.84	R	3	B	LP			41.4	200.6
804	5548	58542	33.56	L	3	C	LP			65.4	2196.0
805	5550	58543	7.04	R	2	B	BS			59.1	416.1
806	5545	58546	10.20	U	2	C	BS			77.5	790.9
807	5546	58546	0.84	U	1	B	BS			20.0	16.8
808	5548	58546	1.52	U	1	B	BS			20.0	30.4
810	5549	58546	13.31	H	3	C	TA			92.1	1226.1
811	5550	58547	2.70	R	3	D	LP	TA	BS	79.5	214.6
812	5552	58545	8.46	R	3	D	LP			95.3	806.1
813	5552	58547	0.29	R	2	D	BS			78.3	22.7
9004	5547	58452	0.55	U	1	B	BS			20.0	11.0
9180	5458	58477	4.44	L	3	C	LP			65.4	290.5
9200	5478	58479	9.21	U	3	A	LP			27.2	250.2
9432	5458	58493	2.21	H	3	A	TA			54.6	120.6

TOTAL FORESTED AREA (km^2) 65.58

TOTAL BIOMASS (t) 434005.7

APPENDIX 5

BIOMASS DATA FOR NORTHWEST TERRITORIES SAMPLE MAP

APPENDIX 5

BIOMASS DATA FOR NORTHWEST TERRITORIES SAMPLE MAP (NTS 75D/4 SW 1/4)

TABLE LEGEND

POLYGON ID:	Only polygons containing forest cover are listed.	
CENTROID UTM:	UTM reference, to the nearest hectare, of the nominal polygon centroid	
AREA:	of polygons in hectares	
SPECIES ASSOCIATION:	S	Softwood
	SH	Mixed wood (softwood dominant)
	HS	Mixed wood (hardwood dominant)
	H	Hardwood
HEIGHT CLASS:	0	0.01 to 1.50 m
	1	2.51 to 7.50 m
	2	7.51 to 12.50 m
	3	12.51 to 17.50 m
	4	17.51 to 22.50 m
	5	22.51 to 27.50 m
	6	27.51 to 32.50 m
	7	over 21.51 m
DENSITY CLASS:	1	1 to 20% crown closure
	3	21 to 40% crown closure
	5	41 to 60% crown closure
	7	61 to 80% crown closure
	9	81 to 100% crown closure
COVER SPECIES:	1	Dominant species
	2	Second dominant/codominant species
	3	Understory
	BS	*Picea mariana* (Mill.) B.S.P. (black spruce)
	JP	*Pinus banksiana* Lamb. (jack pine)
	PO	*Populus* (poplar)
	TA	*Populus tremuloides* Michx. (trembling aspen)
	WS	*Picea glauca* (Moench) Voss (white spruce)
BIOMASS:	Estimated dry weight of standing forest (i.e., with diameter at breast height >0) by hectare and by polygon	

POLYGON ID	CENTROID UTM Zone 12		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
2	4447	66645	14.32	SH	2	3	S	H		49.7	712.1
3	4461	66653	5.94	S	1	3	S			4.6	27.1
5	4454	66642	38.17	SH	2	3	S	H		49.7	1898.2
7	4452	66632	348.15	SH	1	3	JP	H		1.5	523.3
9	4445	66641	2.73	H	2	3	H			41.2	112.5
10	4445	66634	26.37	H	2	3	H			41.2	1086.9
11	4448	66629	8.80	H	2	3	H			41.2	362.7
13	4445	66628	2.53	S	2	3	S			69.9	177.0
17	4454	66601	446.05	S	1	3	BS			38.6	17207.2
20	4452	66605	8.14	S	1	7	BS			49.0	398.8
21	4462	66599	65.47	SH	2	1	S	H		66.4	4345.0
24	4482	66599	4.11	S	2	3	S			69.9	287.5
25	4479	66605	6.61	S	1	3	S			4.6	30.1
32	4474	66624	188.77	SH	1	3	S	H		1.5	283.7
34	4467	66622	19.99	S	1	7	BS			49.0	979.3
38	4467	66628	18.42	HS	2	5	H	S		55.6	1023.5
39	4468	66634	6.06	H	2	5	H			41.2	249.8
40	4465	66637	10.81	S	1	7	BS			49.0	529.6
43	4470	66644	36.33	S	1	7	S			5.8	211.9
45	4475	66651	8.47	S	0	5	BS			38.6	326.7
48	4471	66627	4.27	S	1	3	BS			38.6	164.7
50	4479	66623	36.50	S	1	5	S			10.9	396.8
53	4498	66652	27.42	SH	1	3	S	H		1.5	41.2
54	4498	66645	27.46	S	2	3	BS			79.2	2175.9
58	4498	66634	61.11	S	3	1	BS			38.1	2326.4
59	4495	66637	16.38	HS	1	5	H	S		5.0	82.3
62	4500	66624	11.71	S	2	3	BS			79.2	927.9
64	4517	66641	15.34	SH	1	3	S	H		18.5	284.3
65	4503	66620	42.81	S	1	5	BS			38.6	1651.5
68	4510	66633	256.12	S	1	3	BS			38.6	9880.3
71	4516	66650	115.69	SH	1	3	S	H		18.5	2143.9
73	4528	66654	2.47	H	1	3	H			9.5	23.4
79	4533	66643	22.45	H	1	3	H			9.5	212.9
95	4534	66595	83.70	SH	2	5	BS	H	JP	62.9	5260.7
284	4536	66595	18.08	SH	2	5	JP	H		82.9	1498.9
286	4537	66599	11.71	S	1	1	JP			18.5	216.6
287	4538	66607	22.87	S	1	7	BS			49.0	1120.4
288	4530	66607	353.93	S	1	3	BS			38.6	13653.5
290	4529	66597	3.75	H	2	7	H			93.5	350.6
291	4532	66595	4.50	H	1	3	H			9.5	42.7
292	4535	66590	12.06	SH	2	1	S	H		66.4	800.4
294	4536	66581	26.00	SH	2	9	S	H		100.1	2603.0
295	4535	66579	42.82	SH	2	5	S	H		49.7	2129.4
296	4516	66582	37.10	S	1	5	BS			38.6	1431.2
297	4527	66580	50.02	HS	1	5	TA	S		5.0	251.2
298	4525	66581	12.05	HS	3	5	H	S		55.6	669.6
299	4508	66587	2.09	S	2	3	JP			88.9	185.7
300	4506	66588	86.06	HS	3	5	TA	JP	S	78.8	6780.6
302	4514	66588	12.42	S	2	5	JP			88.9	1103.6
303	4517	66589	31.78	SH	2	3	S	TA		49.7	1580.4
305	4513	66594	10.61	S	1	7	BS			49.0	519.8
306	4512	66591	30.99	HS	2	5	H	S		55.6	1722.0
307	4505	66597	10.67	H	2	3	H			41.2	439.8
308	4502	66589	14.67	S	1	5	BS			38.6	565.9
309	4501	66593	54.80	HS	2	5	TA	JP	S	78.8	4317.6
311	4512	66596	264.35	S	1	3	BS			38.6	10197.8
312	4497	66602	9.71	H	2	5	TA			41.2	400.2
313	4496	66597	12.14	S	3	5	S			69.9	849.2
315	4500	66583	7.38	S	2	5	S			69.9	516.2
318	4510	66568	7.33	HS	3	3	TA	S		55.6	407.3
319	4512	66556	100.55	S	3	5	WS			69.9	7033.1
321	4500	66570	25.97	HS	2	5	H	S		55.6	1443.1
322	4528	66572	240.68	S	1	5	BS			38.6	9284.7
323	4485	66567	64.29	HS	3	3	TA	S		55.6	3572.4
324	4496	66571	24.72	S	1	3	BS			38.6	953.6
327	4490	66579	12.55	S	2	5	S			69.9	877.8
328	4487	66587	27.93	SH	2	5	JP	TA		82.9	2315.5
329	4477	66592	13.49	S	2	5	JP			88.9	1198.7
330	4473	66587	165.94	H	2	3	H			41.2	6839.4
331	4483	66572	29.95	H	2	3	H			41.2	1234.4
332	4475	66583	17.37	SH	1	7	JP	H		37.5	651.6
333	4481	66581	12.77	S	4	5	JP			66.9	854.5
334	4484	66577	10.80	H	3	5	TA			41.2	445.1
336	4485	66582	26.45	HS	3	5	TA	S		55.6	1469.7
337	4474	66568	32.80	SH	3	3	S	H		49.7	1631.1

POLYGON ID	CENTROID UTM Zone 12		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
338	4475	66569	26.41	SH	3	5	S	TA		49.7	1313.3
340	4468	66572	80.08	SH	3	5	JP	TA	S	82.9	6639.0
341	4474	66579	10.73	HS	3	5	TA	JP		78.8	845.4
342	4475	66576	40.06	S	3	7	JP			88.0	3525.3
343	4470	66571	12.05	S	2	5	JP			88.9	1070.7
344	4469	66570	10.94	S	3	3	S			69.9	765.2
345	4464	66570	19.64	H	3	5	H			41.2	809.5
348	4466	66584	6.99	SH	2	5	S	H		49.7	347.6
349	4467	66596	11.06	S	2	1	BS			38.1	421.1
350	4465	66592	22.57	S	1	5	BS			38.6	870.7
353	4458	66599	4.16	HS	3	1	H	S		82.0	341.1
355	4460	66588	14.34	H	2	5	H			41.2	591.0
356	4453	66592	4.46	HS	2	3	H	S		55.6	247.8
357	4445	66606	2.58	SH	2	3	S	H		49.7	128.3
358	4445	66599	8.92	S	2	5	BS			79.2	706.8
360	4446	66590	7.75	S	2	5	S			69.9	542.1
363	4451	66580	11.30	H	2	5	H			41.2	465.7
364	4455	66577	18.78	H	3	5	H			41.2	774.0
365	4460	66578	13.90	HS	2	5	H	S		55.6	772.4
366	4462	66573	10.62	S	1	3	BS			38.6	409.7
367	4458	66574	19.58	H	3	5	H			41.2	807.0
369	4445	66578	11.81	SH	1	7	JP	H		37.5	443.1
371	4447	66572	19.12	S	3	5	JP			88.9	1698.9
372	4449	66570	40.91	S	3	5	JP			88.9	3635.1
373	4454	66569	10.64	HS	3	3	TA	JP		78.8	838.3
374	4459	66570	32.52	SH	4	5	WS	TA	JP	69.8	2270.6
375	4450	66567	13.79	HS	3	3	H	S		55.6	766.3
376	4461	66570	5.37	S	3	1	S			36.6	196.4
378	4492	66562	3.56	HS	3	5	H	S		55.6	197.8
379	4492	66564	7.93	S	1	5	BS			38.6	305.9
380	4502	66560	41.76	S	2	3	JP			88.9	3710.6
381	4526	66546	73.00	SH	3	5	S	TA		49.7	3630.2
382	4513	66559	23.07	HS	3	5	TA	S		55.6	1281.9
383	4522	66555	25.77	S	3	7	JP			88.0	2267.8
384	4519	66559	18.96	HS	1	7	H	S		9.7	183.9
385	4522	66558	7.03	S	3	5	S			69.9	491.7
386	4525	66559	18.93	S	1	7	BS			49.0	927.4
387	4525	66564	15.16	H	1	5	H			9.5	143.7
388	4536	66566	118.02	S	1	5	BS			38.6	4552.8
391	4536	66572	21.42	HS	2	1	H	S		82.0	1756.1
398	4539	66563	5.16	S	2	7	S			93.7	483.5
616	4534	66547	118.64	HS	3	5	H	S		55.6	6592.5
618	4536	66549	10.80	S	2	5	S			69.9	755.4
619	4529	66551	25.43	SH	1	5	S	H	JP	18.5	471.3
620	4530	66548	18.20	S	2	3	S			69.9	1273.0
622	4535	66545	10.32	HS	2	3	H	S		55.6	573.5
623	4536	66540	43.70	S	4	5	WS			65.6	2867.1
624	4534	66539	5.23	H	1	3	PO			9.5	49.6
625	4540	66536	4.46	H	4	3	PO			90.2	402.4
626	4528	66341	9.80	S	4	5	S			65.6	643.0
626	4516	66547	1.01	SH	2	1	S	H		66.4	67.0
626	4522	66542	1.21	SH	2	1	S	H		66.4	80.3
626	4525	66540	0.51	SH	2	1	S	H		66.4	33.8
626	4525	66538	0.49	SH	2	1	S	H		66.4	32.5
626	4525	66536	2.61	SH	2	1	S	H		66.4	173.2
626	4523	66543	1.18	SH	2	1	S	H		66.4	78.3
626	4522	66541	0.77	SH	2	1	S	H		66.4	51.1
627	4527	66543	13.13	H	4	3	TA			90.2	1184.7
628	4510	66548	6.61	SH	3	5	S	H		49.7	328.7
629	4512	66546	9.33	S	4	3	S			65.6	612.1
630	4534	66521	42.45	SH	4	5	S	H		69.8	2964.0
631	4532	66520	81.08	S	3	5	JP			88.9	7204.5
632	4527	66517	15.60	S	2	5	S			69.9	1091.2
634	4506	66534	36.65	S	3	3	S			69.9	2563.5
635	4496	66546	8.40	HS	3	3	H	S		55.6	466.8
636	4499	66531	131.20	S	3	5	P			88.9	11658.0
638	4498	66527	11.00	HS	2	3	H	JP	S	78.8	866.7
639	4497	66521	10.92	H	3	5	H			41.2	450.1
640	4492	66518	27.13	SH	3	5	S	H		49.7	1349.1
642	4494	66521	19.72	S	3	5	WS			69.9	1379.3
643	4494	66526	20.66	S	2	5	JP			88.9	1835.8
644	4486	66528	122.21	SH	2	3	JP	H	S	82.9	10131.8
646	4491	66547	7.83	S	4	5	S			65.6	513.7
647	4482	66554	12.00	S	3	5	H	S		55.6	666.8
650	4476	66528	72.32	S	3	7	JP			88.0	6364.1

POLYGON ID	CENTROID UTM Zone 12		AREA (ha)	SPECIES ASSOC	HEIGHT CLASS	DENSITY CLASS	COVER SPECIES 1	2	3	BIOMASS (t/ha)	BIOMASS (t)
650	4487	66547	11.49	S	2	5	S	JP		99.9	1147.7
651	4486	66543	10.54	S	3	5	S			69.9	737.2
653	4483	66526	18.09	SH	3	5	WS	TA	S	49.7	899.6
655	4489	66523	43.22	HS	0	3	TA	S		5.0	217.1
660	4473	66529	7.49	SH	1	5	JP	H		10.0	74.8
663	4475	66545	7.83	H	3	5	TA			41.2	322.7
664	4480	66549	43.99	S	3	5	JP			88.9	3908.8
667	4469	66559	11.10	H	3	5	H			41.2	457.5
669	4469	66957	29.20	SH	3	5	S	H		49.7	1452.1
669	4472	66559	17.58	SH	3	5	S	H		49.7	874.2
670	4469	66555	17.59	S	1	5	BS			38.6	678.6
671	4473	66551	11.36	S	3	5	S			69.9	794.6
672	4467	66546	4.97	HS	3	5	TA	S		55.6	276.2
673	4465	66544	4.26	S	1	7	BS			49.0	208.7
674	4469	66531	40.19	S	4	3	JP			66.9	2689.4
675	4446	66540	32.92	SH	3	5	JP	TA		82.9	2729.2
676	4466	66518	184.70	S	1	7	BS			49.0	9048.3
678	4458	66522	9.49	H	2	5	H			41.2	391.1
679	4453	66517	12.41	S	1	7	BS			49.0	608.0
682	4449	66521	12.94	SH	3	5	JP	TA		82.9	1072.8
684	4453	66525	36.55	HS	3	1	TA	S	JP	82.0	2996.5
685	4451	66526	0.77	HS	3	3	TA	S	JP	55.6	42.8
686	4415	66531	3.15	H	1	7	TA			15.5	48.8
687	4450	66528	17.07	HS	3	5	TA	S		55.6	948.5
689	4452	66532	94.40	H	3	3	TA			41.2	3890.8
693	4447	66534	14.14	HS	3	5	TA	JP		78.8	1114.1
694	4450	66539	11.16	SH	3	1	JP	TA		76.8	856.9
696	4452	66547	113.78	H	3	5	TA			41.2	4689.6
698	4444	66547	4.15	H	3	5	TA			41.2	171.0
698	4446	66546	0.09	H	1	7	TA			15.5	1.4
699	4464	66550	97.32	H	3	1	TA			58.4	5688.1
701	4458	66557	56.51	S	2	5	S			69.9	3952.7
706	4451	66560	38.25	H	2	3	H			41.2	1576.5
707	4455	66528	33.00	HS	1	7	TA	JP		58.0	1915.0
713	4457	66560	58.88	S	3	1	S			36.6	2153.8
746	4521	66553	13.34	S	3	5	JP			88.9	1185.3
748	4477	66544	1.20	H	3	5	TA			41.2	49.5
749	4478	66534	16.08	S	3	7	JP			88.0	1415.0
751	4463	66526	3.84	S	1	7	BS			49.0	188.1
754	4487	66548	20.23	S	1	7	BS			49.0	991.1
757	4520	66527	19.08	SH	4	5	S	H		69.8	1332.2
770	4528	66555	5.39	S	3	7	JP			88.0	474.3
771	4535	66598	17.39	S	2	3	S			69.9	1216.4
774	4508	66590	7.43	S	1	7	BS			49.0	364.0
900	4463	66582	30.03	SH	1	3	S	H		18.5	556.5
902	4448	66578	10.32	S	1	7	BS			38.3	395.3
904	4421	66581	16.02	HS	1	5	TA	S		5.0	80.5
905	4494	66610	3.88	S	1	5	BS			38.6	149.7
906	4536	66562	46.57	HS	2	3	JP	H	S	82.9	3860.9

TOTAL FORESTED AREA (km^2) 70.41

TOTAL BIOMASS (t) 339348.3